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GOROSHCHENKO, YA. G., and BELYAKOVA, YE. P., Ukrainskiy Khimicheskiy Zhurnal, Vol 36, No 5, May 70, pp 520-521

kali metals. V. N. ANDREYEVA and YE. B. GITMAN reported on a method for the preparation of fibrous compound based on titanium dioxide. M. V. SMIRNOV et al. reported on a study of the effect of the nature of cations on the passivation of titanium in molten carbonates of alkali metals. The interaction of titanium with silicon and boron nitrides and regularities in the structure formation of alloys based on titanium carbide were discussed in papers by staff members of the Institute for Problems in Metallography, Academy of Sciences Ukrainian SSR. M. I. AYVAZOV et al. (Institute of New Chemical Problems, Academy of Sciences USSR) reported on the synthesis and study of the compounds TixN, where x = B, Si, Ge, and TiMeO, where Me = Fe, Mn, Co and Ni. G. D. BOGOMOLOV et al. (Institute of Chemistry, Ural Branch of the Academy of Sciences USSR) discussed the synthesis and properties of titanium hydroxycarbides, hydroxynitrides, carbonitrides, M. N. DANCHEVSKAYA and YE. I. FIGUROVSKAYA (Moscow State

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GOROSHCHENKO, YA. G., and BELYAKOVA, YE. P., Ukrainskiy Khimicheskiy Zhurnal, Vol 36, No 5, May 70, pp 520-521

University) the low-temperature evaporation of titanium from titanium dioxide.

Papers by A. T. PILIPENKO, et al., A. N. NESMEYANOV, et al., I. V. PYATNITSKIY, et al. (Kiev State University), and N. F. ZAKHARIN, et al. (Institute of General and Inorganic Chemistry, Academy of Sciences Ukrainian SSR) dealt with the chemistry of complex compounds and the analytical chemistry of titanium.

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USSR B UDC 621.373.421.13:621.372.412

BELYAKOVICH, E. I., GRUZINENKO, V. B., YAROSLAVSKIY, M. I.

"Problem of Tuning Quartz Resonators with Shear Oscillations with Respect to the Circuit"

Elektron. tekhnika. Nauchno-tekhn. sb. (Electronic Engineering. Scientific and Technical Collection), 1970, ser 9, vyp. 2, pp 96-98 (from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9D276)

Translation: A procedure is recommended for adjusting the frequency of rectangular-shape piezoelements with various relations of the transverse dimensions insuring minimum variations of the equivalent parameters and frequency temperature characteristics. There are two illustrations and a three-entry bibliography.

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USSR

UDC: 669.018.8

TOMASHOV, N. D., RUSKOL, Yu. S., FILIPPOV, A. F., BELYANCHIKOV, I. N., PLAVNIK, G. M., and FEDOROVA, G. M., Institute of Physical Chemistry, Academy of Sciences USSR

"Corrosion Behavior of Titanium-Molybdenum-Chromium Alloys"

Moscow, Zashchita Metallov, Vol 6, No 5, Sep-Oct 70, pp 499-504

Abstract: This paper deals with the effect of chromium on the corrosion resistance of titanium alloys containing 5 and 10% molybdenum. The electrochemical and corrosion behavior of the alloys was studied by potentiometry, both the current and weight losses being the indicators of the corrosion rate. It has been shown that the β-phase of titanium alloys containing a stable (under the testing conditions) component such as molybdenum, possesses elevated corrosion resistance. In the active dissolution of two-phase α+β--alloys of titanium with molybdenum, predominantly the α-phase goes into solution, while the β-phase remains at the surface in the form of a finely disperse layer. In the active

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TOMASHOV, N. D., et al, Zashchita Metallov, Vol 6, No 5, Sep-Oct 70, PP 499-504

dissolution in nonoxidizing media, the corrosion rate of Ti-Mo-Cr alloys markedly decreases only on addition of chromium in an amount sufficient for producing single-phase ß-alloys (Ti-5Mo-10Cr and Ti-10Mo-10Cr); however, if the alloys have an α+ß-structure, then the corrosion rate remains about the same (as compared to Ti-Mo alloys). Chromium addition reduces the tendency of alloys to over-passivation, which is caused by the presence of Mo, and the Ti-5Mo-10Cr alloy exhibits the same low corrosion rate within 0.15 to 1.2 v as titanium or Ti-10Cr alloy. At potentials which are more positive than 1.2 v, the corrosion rate of Ti-Mo-Cr alloys begins to increase owing to the tendency of chromium to over-passivation.

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AAU013574

UR 0482

Soviet Inventions Illustrated, Section III Mechanical and General, Derwent,

236139 HIGH RIGIDITY BEARING ASSEMBLY obtained by applying a differential preload to bearings (3). The inboard elastic element (4) applies on its own a load on the outer race which is 3-4 times the required axial preload. The outboard elastic element (5) acting in opposite direction on the outer raxe of the second bearing reduces the axial load to that which is required. Regulation of the axial load is possible by adjusting the nut (6).

26.4.67. as 1150407/25-27, BELYANCHIKOV, M.P. et al. U.S.S.R. Bearing Design Inst. (16.6.69) Bul. 6/24.1.69. Class 47b Int. Cl. F 16c.

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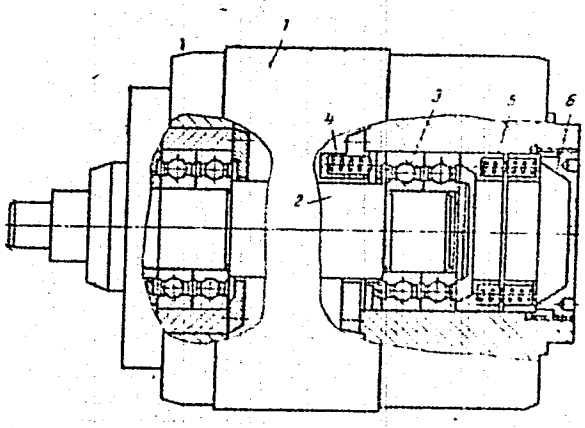

AUTHORS: Bel'yanchikov, M. P.; Chebotarevskiy, A. V.; Komissarov, S. M.

Vsesoyuznyy Nauchno-Issledovatel'skiy Konstruktorsko-Tekhnologich-eskiy Institut Podshipnikovoy Promyshlennosti

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19851210

USSR UDC:620.179.18

BELYANIN, A. N.

"Interprobe Spaces in a Radiointroscope as an Open Superhigh Frequency Resonator"

Defektoskopiya, No. 3, 1970, pp. 105-110

Abstract: Results are presented from the theory and practical application of the resonant interprobe space of a radiointroscope. Creation in the space of conditions for sufficiently high-Q oscillations allows the effectiveness of radiointroscopic testing to be sharply increased. Although theoretical evaluation of the resolving capacity of a resonant device of this type is impossible, experience has shown that the use of mirrors with D = 2 λ does not decrease resolution in the search for local defects.

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USSR

UDC 533.607.11

BELYANIN, B. V., KHARITONOV, A. M., CHUSOV, D. V.

"Study of the Flow Characteristics After Exit Cones with Large Expansion Angles"

Izvestiya sibirskogo otdeleniya Akademii Nauk SSSR, Seriya tekhnicheskikh nauk, No 8 (203), vyp. 2, Jun 1972, pp 54-57

Abstract: A study was made to obtain data on the flow characteristics in the forechamber after exit cones with large angles of expansion and large area ratios in the presence of various equalizing and deturbulizing devices. The studies were performed on a special test unit which was equipped with replaceable exit cones with angles of expansion of 8, 45 and 90° with fixed area ratio of 14. Equalizing lattices, a perforated cone or longitudinal barriers were installed in the exit cones successively, and in the forechamber, a set of deturbulizing grids. The forechamber 800 mm in diameter and three diameters long ended in a convergent channel with a cylindrical chamber of smaller diameter. In the second chamber the flow velocity was 2.5 times higher than in the forechamber. The equalizing lattices were installed one in the exit cross section of the exit cone with a degree of preparation of 37%, two at a distance of 1/3 and 2/3 of the length of the exit cone from the intake cross section with a perforation of 42 and 43% respectively. The perforated cone with a central angle of 120° was installed in the exit cross section of the exit cone. The Re numbers were varied with respect to the parameters at the intake to the

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BELYANIN, B. V., et al., Izvestiya sibirskogo otdeleniya Akademii Nauk SSSR, Seriya tekhnicheskikh nauk, No 8 (203), vyp. 2, Jun 1972, pp 54-57

exit cone in different experiments in the range from 10^6 to 10^7. Significant flow pulsations and unsatisfactory uniformity of the velocity field were observed in all cases when studying the velocity field after exit cones with the given angles of expansion without equalizers. The equalizers were studied in an exit cone with an angle of 45°. The characteristics of the degree of nonuniformity of the velocity field in the forechamber $\Delta V_{mean}/V_{mean}$% (ΔV_{mean} is the mean value of the deviations from the mean velocity in the forechamber, V_{mean} is the mean flow velocity in the forechamber) are tabulated for various equalizers. It was found that $\Delta V_{mean}/V_{mean} \leq 3\%$ is acceptable. The results of multiple measurements of the turbulence level ε in the second cross section of the forechamber are tabulated. They show that for identical combinations of equalizers (perforated cone and 7 grids) the degree of turbulence after the exit cones of 8 and 45° is identical in practice. The drag was found to be constant in the investigated range of Reynolds numbers, and the greatest part of the losses are created by the exit cone itself. Exit cones with large angles of expansion can be used with properly chosen equalizers in wind tunnels and other devices.

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USSR

UDC: 528.526.2

BELYANIN, Ye. Ye.

"System Deviation of a Plane Gyroscopic Pendulum in Uncontrolled Rolling of an Object"

Leningrad, Priborostroyeniye, No 1, 1972, pp 98-102

Abstract: Pendulums used as correcting elements in gyroverticals are subject to the deficiency of systematic deviations under rolling action, with the deviations depending on the intensity of the rolling and the distance between the pendulum pivot and the rolling center. The purpose of this theoretical article is to show that plane gyroscopic pendulums are free of this deficiency. This type of pendulum is defined as a combination of a flat pendulum and a gyroscope, with the gyroscope inside the body of the pendulum capable of rotating around the axis of its housing. The rotation of the gyroscope and its housing relative to the pendulum is limited by a spring. In his analysis of the pendulum's operation, the author is dependent on a study of its characteristic oscillations (B. V. Bulgakov, Prikladnaya teoriya gidroskopov -- Applied Gyroscope Theory -- Part 1, GITTL, 1955) and of its motion in rolling (Ya. N. Roytenberg, Giroskopy -- Gyroscopes -- izd-vo "Nauka," 1966). He is associated with the Kiev Polytechnical Institute.

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1/2 011 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--THE EFFECT OF CARBON SOURCE ON THE AMINO ACID CONTENT IN PROTEINS OF PHOTOSYNTHETIC BACTERIA -U-

AUTHOR-(02)-MALOFEYEVA, I.V., BELYANOVA, L.P.

COUNTRY OF INFO--USSR

SOURCE--MIKROBIOLOGIYA, 1970, VOL 39, NR 1, PP 82-86

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CARBON, AMINO ACID, PROTEIN, PSEUDOMONAS, MICROORGANISM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/0443 STEP NO--UR/0220/70/039/001/0082/0086

CIRC ACCESSION NO--AP0117679

UNCLASSIFIED

2/2 011 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0117679

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PROTEIN CONTENT IN THE CELLS OF GREEN (CHLOROPSEUDOMONAS ETHYLICA, STRAIN 3C) AND PURPLE (CHROMATIUM MINUTISSIMUM, STRAIN 2C AND PHODOPSEUDOMONAS SP., STRAIN I) SULPHUR BACTERIA WAS HIGHER DURING THEIR GROWTH IN THE MEDIUM WITH ACETATE THAN IN THE MINERAL MEDIUM WITH BICARBONATE. SWITCHING OF THESE MICROORGANISMS FROM THE PHOTOAUTOTROPHIC PATHWAY TO THE HETEROTROPHIC ONE WAS ACCOMPANIED BY SOME CHANGES IN THE CONTENT AND RATIO OF INDIVIDUAL AMINO ACIDS IN PROTEINS. CHANGES IN THE CONTENT OF HISTIDINE, THREONINE, SERINE, VALINE, LEUCINE AND TYROSINE, DEPENDENT ON GROWTH MEDIUM, WERE REGISTERED IN CHL. ETHYLICA. THE CONTENT OF ALMOST ALL AMINO ACIDS, AND ESPECIALLY OF ALANINE, LEUCINE AND GLUTAMIC ACID, UNDERWENT CHANGES IN PROTEINS OF THE PURPLE BACTERIA.

UNCLASSIFIED

USSR

UDC: 621.372.826

BELYANSKIY, V. B. and GUL'KAROV, F. S.

"Estimating the Permissible Dispersion in Geometric Dimensions of Surface Wave Waveguides"

Sb. tr. Nauchno-tekhn. konferentsii prof.-prepodavat. sostava Vses. zaochn. elektrotekhn. in-ta svyazi (Collected Transactions of the Scientific-Technical Conference of the Professorial-Instructor Staff of the All-Union Correspondence Electrical Engineering Communication Institute), No. 5, Moscow, 1970, pp 146-153 (from RZh-Radiotekhnika, No. 3, March 71, Abstract No. 3B128)

Translation: Through the use of the perturbation method, an estimate is made of the permissible dispersion in geometric dimensions of surface wave cylindrical waveguides (lightguides, in particular) containing nonuniformities of the type of random variations in rod diameter. It is shown that the wave attenuation depends to a large extent on the cleanliness of the surface. The attenuation caused by the nonuniformity of the structure is trivial if the quasi-period of the nonuniformity is much greater or much less than $\lambda_0/2\pi$. Bibliography of six.

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USSR UDC 614.449.542(571.17)

BELYANTSEVA, G. I., DOBRYNINA, L. I., and GORCHAKOVSKAYA, N. N., Novokusnetsk Municipal Sanitary Epidemiological Station and Institute of Poliomyelitis and Viral Encephalitides, Academy of Medical Sciences USSR

"Results of Long-Term Efforts to Control the Vector of Tickborne Encephalitis in the Novokuznetsk Rayon of Kemerovo Oblast"

Moscow, Meditsinskaya Parazitologiya i Parazitarnyye Bolezni, No 6, 1971, pp 722-730

Abstract: Novokusnetsk is a large industrial center in Kemerovo Oblast located in southwestern Siberia; 28% of the total area of Novokuznetsk Rayon is covered by forests. The incidence of tickborne encephalitis in this region decreased from 214 cases in 1956 to only 4 in 1967. This was achieved by systematic efforts to exterminate the vector, the tick Ixodes persulcatus, mostly aerial dusting with DDT and lindane. Some 127,000 hectatres (or 21%) of the inhabited area of Novokuznetsk rayon was treated from 1957 to 1968 in order to protect the urban population against ticks (mainly in summer vacation places). DDT was found to be particularly effective in wooded areas visited by persons in connection with their jobs or for recreation both in the year of application and for as long as 11 years thereafter. The acaricide lindane, which remains potent for 1 or 2 years, was used to protect temporary athletic fields, military camps, etc.

1/2 023 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--COLOR PHOTO DEVELOPMENT FOR DIAPOSITIVES -U-

AUTHOR-(03)-FILIN, V.N., ANDRIANOV, K.I., BELYAROVA, T.N.

COUNTRY OF INFO--USSR

SOURCE--POLIGRAFIYA 1970, 1 26-9

DATE PUBLISHED-------70

SUBJECT AREAS--METHODS AND EQUIPMENT

TOPIC TAGS--PHOTOGRAPHIC MATERIAL, COLOR PHOTOGRAPHY, PHOTOGRAPHIC EMULSION/(U)FT41 PHOTOGRAPHIC MATERIAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3006/0724 STEP NO--UR/0543/70/001/000/0026/0029

CIRC ACCESSION NO--AP0134459

UNCLASSIFIED

2/2 023 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0134459

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN THE PREPN. OF DIAPOSITIVES DIRECTLY FROM PHOTOGRAPHIC MATERIAL FT 41 A PHENIDONE HYDROQUINONE DEVELOPER (1ST DEVELOPER) AND A DEVELOPER CONTG. T-32 (N,ETHYL,N,(2,HYDROXYETHYL),P,PHENYLENEDIAMINE SULFATE), ALPHA,NAPHTHOL, AND PHENIDONE (2ND DEVELOPER) WERE USED. THE OPTIMAL CONCNS. OF KNCS, HYDROQUINONE, PHENIDONE, AND T-32 WERE DETD. PROCESSING SCHEME: (1) 1ST DEVELOPMENT 5-7 MIN AT 20DEGREES (DEVELOPER COMPN.: PHENIDONE 0.4, HYDROQUINONE 10, ANHYD. NA SUB2 SO SUB3 70, NA SUB2 SO SUB3 60, KBR 7, KNCS 2.5 G, H SUB2 O TO 1000 ML); (2) WASHING 10 MIN AT 14-16DEGREES, (3) BLEACHING 1-2 MIN AT 20DEGREES (K SUB2 CR SUB2 O SUB7 10 G, H SUB2 SO SUB4 10 ML, H SUB2 O TO 1000 ML); (4) CLARIFYING 1 MIN AT 20DEGREES IN 10PERCENT SOLN. OF NA SUB2 SO SUB3; (5) WASHING 3-5 MIN AT 20DEGREES; (6) 2ND EXPOSURE FOR 1 MIN WITH A 500-W LAMP AT 1 M; (7) 2ND DEVELOPMENT 5-7 MIN AT 20DEGREES (SOLN. A: HYDROXYLAMINE 1.5, T-32 9, ANHYD. NA SUB2 SO SUB3 2, KBR 3 G, H SUB2 O TO 500 ML; SOLN. B: K SUB2 CO SUB3 75, PHENIDONE 0.2, ALPHA,NAPHTHOL 2 G, H SUB2 O TO 500 ML; 1:1 MIXT. OF A PLUS B), (8) FIXING 2-3 MIN AT 18-20DEGREES; (9) WASHING 2-3 MIN AT 18-20DEGREES.

UNCLASSIFIED

1/3 025 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--INFLUENCE OF HEAT TREATMENT ON THE STRUCTURE AND PROPERTIES OF SURFACE ALLOYED CASTINGS FROM STEEL 30L -U-
AUTHOR-(04)-BELYATSKAYA, I.S., MIKHAYLOV, A.M., NOVICHKOVA, V.YA., SIDOKHIN, A.F.
COUNTRY OF INFO--USSR

B

SOURCE--IZV. VYSSH. UCHEB. ZAVED., CHERN. MET. 1970, 13(4), 163-6

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--CAST STEEL, ANNEALING, METAL NORMALIZING, X RAY SPECTRUM, METAL SURFACE PROPERTY, ALLOY PHASE TRANSFORMATION, CARBIDE PHASE, MICROHARDNESS, THERMAL STABILITY, SURFACE HARDENING, ALLOY ADDITIVE/(U)30L STEEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3005/0809 STEP NO--UR/0148/70/013/004/0163/0166

CIRC ACCESSION NO--AT0132904
UNCLASSIFIED

2/3 025 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AT0132904

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE INFLUENCE OF ANNEALING AND NORMALIZING ON THE STRUCTURE AND THE PROPERTIES OF LAYERS OF CASTINGS FROM STEEL 30L WAS STUDIED. THE SAMPLES WERE HEATED IN A MUFFLE FURNACE TO 800DEGREES FOR 1.5 HR, AFTER WHICH THEY WERE COOLED IN THE FURNACE (ANNEALING), OR IN AIR (NORMALIZING). MICRO X RAY SPECTRAL ANAL. SHOWED THAT THE DISTRIBUTION OF THE ALLOYING ELEMENTS ALONG THE DEPTH OF THE LAYERS FOR ALL PRACTICAL PURPOSES DOES NOT CHANGE AS COMPARED TO THE DISTRIBUTION IN THE CAST STATE. THIS TREATMENT EXERTS THE LEAST EFFECT ON THE STRUCTURE OF MN ALLOYED LAYER. THE CHANGES OCCUR PRIMARILY IN THE TRANSITION ZONE BETWEEN THE LAYER AND THE MATRIX METAL. AFTER NORMALIZING, SECONDARY CARBIDES SEGREGATE IN THE DIFFUSION BAND, AND THE MICROHARDNESS OF THE AUSTENITE INCREASES TO 500-700 DK-MM PRIME2, APPARENTLY OWING TO PARTIAL MARTENSITIC TRANSFORMATION. AUSTENITE DENDRITES WITH A MICROHARDNESS OF 300-20 KG-MM PRIME2 AND CARBIDE EUTECTIC REMAIN PRIMARILY IN THE CAST ZONE OF THE LAYER. THE MATRIX STEEL AT THE BOUNDARY WITH THE ALLOYED LAYER HAS A MARTENSITIC STRUCTURE WITH A MICROHARDNESS OF 650-700 KG-MM PRIME2 AND THAT OF TROOSTITE MARTENSITE. AFTER ANNEALING, THERE OCCURS PARTIAL PEARLITE TRANSFORMATION IN THE DIFFUSION BAND. THE MICROHARDNESS OF HTE PEARLITE PORTIONS AMTS. TO 280-380 KG-MM PRIM2, AND THAT OF THE AUSTENITIC PARTS TO 280-300 KG-MM PRIME2. THE CARBIDE PHASE IN THE CAST STATE AND AFTER THERMAL TREATMENT IS A CARBIDE OF THE (FE, MN) SUB3 C TYPE, WITH A MICROHARDNESS OF 800-1100 KG-MM PRIME2.

UNCLASSIFIED

3/3 025 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AT0132904

ABSTRACT/EXTRACT--THE GOOD THERMAL STABILITY OF THE ALLOYED LAYERS IS ATTESTED TO BY THE LACK OF CRACKING OR THEIR PHASE SEPN. FROM MATRIX METAL. FACILITY: MOSK. INST. STALI SPLAVOV, MOSCOW, USSR.

UNCLASSIFIED

1/2 024 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--REASONS FOR THE INFLUENCE OF LOW TEMPERATURE TEMPERING ON THE STRESS RUPTURE STRENGTH OF ALLOYS BASED ON NICKEL AND CHROMIUM -U-

AUTHOR-(03)-BELYATSKAYA, I.S., RYBALOV, R.G., TUMANOVA, N.G.

COUNTRY OF INFO--USSR

SOURCE--FIZ. METAL. METALLOVED. 1970, 29(1) 186-8

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--CHROMIUM ALLOY, ALLOY DESIGNATION, NICHROME ALLOY, METAL CREEP RUPTURE STRENGTH, ELECTRON MICROSCOP, RESISTIVITY, NICKEL BASE ALLOY/(U)EI437 NICKEL BASE ALLOY, (U)EI617 NICKEL BASE ALLOY, (U)EI698 NICKEL BASE ALLOY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/0697 STEP NO--UR/0126/70/029/001/0186/0188

CIRC ACCESSION NO--AP0105673

UNCLASSIFIED

2/2 024 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0105673

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. NEW DATA WERE OBTAINED ON ALLOY EI698 (WHICH DIFFERS IN COMPN. FROM ALLOY EI617), THEREBY CONFIRMING THE INCREASE OF LONG TERM STRENGTH AS A RESULT OF LOW TEMP. TEMPERING IN ADDN. TO CONVENTIONAL HEAT TREATMENT. BASED ON ELECTRON MICROSCOPIC STUDIES, THE EFFECT OF THE LOW TEMP TREATMENT IS NOT ASSOCD. WITH THE ADDNL. PPTN. OF THE STRENGTHENING PHASE. AFTER TEMPERING AT 775DEGREES THE SP. ELEC. RESISTIVITY OF THE ALLOY EI698 DECREASES AS COMPARED TO THE QUENCHED STATE; AFTER LOW TEMP. TEMPERING IT INCREASES, AND DOES NOT GO ON DECREASING, AS ONE WOULD EXPECT TO HAPPEN UPON ADDNL. PPTN. OF THE GAMMA PRIME PHASE. THE INCREASE IN ELEC. RESISTIVITY IS APPARENTLY CAUSED BY THE SAME PROCESSES WHICH ALSO TAKE PLACE IN NICHROME, AND ALLOYS EI437 AND EI617. AN EXPLANATION IS OFFERED FOR THE ROLD OF LOW TEMP. TEMPERING: DURING LOW TEMP. TEMPERING THERE PROCEEDS THE FORMATION OF ORDERED REGIONS IN THE MATRIX SOLID SOLN., AND THE CRIT. TEMP. OF THE ORDERING LIES SOMEWHAT HIGHER THAN THE OPERATING TEMP. AT THE OPERATING TEMP. THE FORMATION OF ORDERED REGIONS FOR ALL PRACTICAL PURPOSES DOES NOT TAKE PLACE IN THE QUENCHED ALLOY. THESE FORM DURING THE LOW TEMP. TEMPERING AT A NOTICEABLE RATE, AND ARE THEN PRESERVED WITH INCREASED TEMP. TO THE OPERATING TEMPS.

UNCLASSIFIED

USSR UDC: 548.4

BELYATSKAYA, N. S., GRISHINA, S. P., LOPATIN, Ye. P., MIL'-VIDSKIY, M. G., OSVENSKIY, V. B., FOMIN, V. G., State Scientific Research and Design Institute for the Rare Metals Industry

"Structural Singularities of Gallium Arsenide Single Crystals Heavily Doped With Donor Impurities"

Moscow, Kristallografiya, Vol 17, No 1, Jan/Feb 72, pp 158-165

Abstract: A study is made of the effect which tellurium, selenium, and sulfur doping has on the degree of perfectness of GaAs single crystals. Metallographic and radiographic studies show that doping to high concentrations with donor impurities ($n > 10^{18}$/cc) may lead to an appreciable reduction in the dislocation density and to a specific distribution in the volume of the GaAs single crystals due to strengthening of the material and intensification of the process of dislocation creep during doping. Nonhomogeneous dopant distribution in heavily doped single crystals is an additional source

USSR

BELYATSKAYA, N. S. et al., Kristallografiya, Jan/Feb 72, pp 158-165

of dislocations. Structural investigations show that in the process of growing gallium arsenide single crystals heavily doped with donor impurities, partial decomposition of supersaturated solid solutions takes place, accompanied by the development of additional internal stresses and a lumped structure within the crystal. Five figures, one table, bibliography of eleven titles.

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USSR

UDC: 681.3

ATSTOPAS, F. F., BELYAUSKAS, B. B.

"Typical Structure of P-Microprograms for Some Input/Output Devices"

V sb. Avtomatika i vychisl. tekhn. (Automation and Computer Technology--collection of works), No 3, Vil'nyus, "Mintis", 1971, pp 141-146 (from RZh-Kibernetika, No 12, Dec 71, Abstract No 12V892)

Translation: The paper describes typical structures of devices for input from punched tape, punchcards (from the narrow side) and magnetic tape, and also devices for output on these same media. The algorithmic structures corresponding to these P-microprograms are presented. These data can be used in structural synthesis of digital computers to systematize design. Authors' abstract.

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USSR UDC 681.142.001:51

ATSTOPAS, F. F., BELYAUSKAS, B. B., ZHINTELIS, G. B.

"SID -- a Formal Language for Describing the Algorithmic Structure and Dynamics of Digital Computers"

Vil'nyus, Nauchnyye trudy vysshikh uchebnykh zavedeniy Lit. SSR. Avtomatika i vychislitel'naya tekhnika (Scientific Works of Institutions of Higher Education of the Lithuanian SSR. Automation and Computer Technology), No 2, 1970, "Mintis", pp 31-65

Abstract: The authors consider the formal language SID designed for describing the algorithmic structure and dynamics of digital computers. SID is a metalanguage for systematizing the logical stage of digital computer design. The description of SID is presented by means of the Backus-Naur metalanguage. Nine illustrations, bibliography of six titles.

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USSR UDC 543.544.2

NEMIROVSKAYA, I. A., and BELYAVSKAYA, T. A., Chair of Analytical Chemistry

"Swelling of Cation Exchange Resin KU-2 in Aqueous Organic Solutions of Mineral Acids"

Moscow, Vestnik Moskovskogo Universiteta, Vol 12, No 6, Nov-Dec 71, pp 743-745

Abstract: The swelling of cation exchange resin KU-2 was studied in aqueous methanol, propanol, acetone, dioxane, and dimethylformamide solutions of hydrochloric, sulfuric and nitric acids. The swelling was found to decrease with increasing molar fraction of the organic solvent in acid solutions. This phenomenon agrees with the rule that the ion exchange resins swell more extensively in water than in solvents with lower dielectric permeability. Thermodynamic properties of the solutions also show an effect on the swelling of exchange resins: in dioxane solutions in which the dielectric permeability is lower than in acetone solutions, the swelling nevertheless is greater. The swelling in dimethylformamide solutions is different from other organic media because this solvent is the most basic and polar agent and yet it cannot solvate the cations. The overall swelling depends on the water sorption as well as on the sorption of the solvent, except that acid sorption is negligible. In general, the acid shows no effect on the absolute value of swelling except for lowering it.

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USSR UDC 543.544.6.546.45

BELYAVSKAYA, T. A., and NEMIROVSKAYA, I. A., Chair of Analytical Chemistry

"Study of Beryllium Complexing in Aqueous Organic Solutions of Mineral Acids by the Ion Exchange Method"

Moscow, Vestnik Moskovskogo Universiteta, Vol 12, No 6, Nov-Dec 71, pp 745-748

Abstract: Addition of an organic solvent to aqueous solutions facilitates dehydration of ions and formation of strong complexes. A study was carried out on the effect of methanol, isopropyl alcohol, acetone, dioxane, and dimethylformamide on the beryllium complexing in solutions of hydrochloric, sulfuric, and nitric acids by the ion exchange method. It was determined that in absence of organic solvent and with its concentrations up to 50%, the concentration of hydrochloric acid had no effect on the absorption of beryllium. Only when the concentration of organic solvent reached 80%, an effect of hydrochloric acid became noticeable: this indicates formation of a complex between the beryllium and Cl^- ions. In dimethylformamide solutions no effect of the acid is noticeable at all. An increase in the concentration of $SO_4^{=}$ ions shows no effect on the distribution of beryllium, while NO_3^- facilitates absorption of beryllium by the ion exchange resin with increasing concentration.

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UDC: 541.183 546.631

DOBRUSHINA, G. D., BELYAVSKAYA, T. A., Department of Analytical Chemistry, Moscow State University imeni M. V. Lomonosov, Moscow Ministry of Higher and Secondary Specialized Education RSFSR

"Sorption of Zirconium from Nitrate Solutions in the Presence of Some Organic Acids and Solvents"

Moscow, Vestnik Moskovskogo Universiteta, Seriya II, Khimiya, Vol 11, No 1, Jan/Feb 70, pp 84-87

Abstract: The authors studied the sorption behavior of zirconium on KU-2 cation-exchange resin and AV-17 anion-exchange resin in nitrate solutions in a mixture with methyl and propyl alcohols, acetone, dioxane and organic acids (formic, acetic and propionic). Zirconium sorption was studied as a function of the concentration of nitric acid and organic component. The concentration of organic components in the solution was varied from 0 to 80% by volume, and the concentration of nitric acid was varied from 0.5 to 5.0 N. in nitrate solutions of organic solvents, and from 0.5 to 2.0 N. in nitrate solutions of organic acids. It was found that zirconium sorption on KU-2 cation-exchange resin increases with an increase in the concentration of organic solvent when the acidity of the solution is 0.5-1.0 N. Acetone produces the maximum increase in sorption, and methanol has hardly any effect. At acidities of 3.0-5.0 N., the introduction of organic

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DOBRUSHINA, G. D., BELYAVSKAYA, T. A., Vestnik Moskovskogo Universiteta, Seriya II, Khimiya, Vol 11, No 1, Jan/Feb 70, pp 84-87

solvents either slightly reduces sorption or has no effect. In the case of AV-17 anion-exchange resin, zirconium sorption decreases in the presence of small quantities of organic solvents. However, when the volume of organic solvent is increased to 40-60% or more, zirconium sorption begins to increase. Again, acetone has the strongest effect, and methanol causes no increase in sorption. The presence of organic acids decreases zirconium sorption by KU-2. Formic acid reduces sorption to a lesser degree than do acetic and propionic acids. When the maximum possible quantity of organic acid is added, there is somewhat of an increase in sorption which shows up most strongly in solutions of low acidity. Acetic acid causes the greatest change in this respect. The slight sorption of zirconium by AV-17 resin is hardly changed at all by formic or acetic acid, and is only slightly increased by the addition of 80-90% propionic acid.

2/2

1/2 024 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--ZIRCONIUM ADSORPTION FROM NITRIC ACID SOLUTIONS MIXED WITH CERTAIN ORGANIC ACIDS AND SOLVENTS -U-

AUTHOR-(02)-DOBRUSHINA, G.D., BELYAVSKAYA, T.A.

B

COUNTRY OF INFO--USSR

SOURCE--VESTN. MOSK. UNIV., KHIM. 1970, 11(1), 84-7

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ZIRCONIUM, NITRIC ACID, ORGANIC ACID, CATION EXCHANGE RESIN, ADSORPTION/(U)KU2 CATION EXCHANGER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/1472 STEP NO--UR/0189/70/011/001/0084/0087

CIRC ACCESSION NO--AP0120259

UNCLASSIFIED

2/2 024 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0120259

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ADSORPTION OF ZR WAS STUDIED ON KU-2 CATION EXCHANGER AND THE AB-17 ANION EXCHANGER IN HNO SUB3 SOLNS. MIXED WITH MEOH, PROH, ME SUB2 CO, DIOXANE, AND ORG. ACIDS (HCOOH, ACOH, PRCOOH). THE ADSORPTION WAS DETD. AS A FUNCTION OF THE CONCN. OF HNO SUB3 AND THE ORG. COMPONENT. THE CHANGE IN THE ADSORPTION IN THE MIXED SOLNS. AS COMPARED TO AQ. SOLNS. IS DUE TO THE NO. OF FACTORS RELATED TO THE CHANGE IN THE IONIC STATE OF THE ELEMENT AND TO CHANGES IN THE PROPERTIES OF THE ION EXCHANGERS IN THE PRESENCE OF ORG. COMPDS. THE INCREASE OBSERVED ON THE CATION EXCHANGER FOR THE ADDN. OF ORG. SOLVENTS TO A 0.5-1.0NU ACID SOLN. IS APPARENTLY RELATED TO THE STABILIZING OF THE POS. CHARGED COMPLEX IONS, ZR(NO SUB3) PRIME3POSITIVE WHICH EXIST IN THE SOLN. AND THE ADSORPTION OF ZR PRIME4POSITIVE IONS. THE ADDN. OF THE ORG. SOLVENTS TO MORE ACIDIC SOLNS. BRINGS ABOUT A DECREASE IN THE ADSORPTION. THUS, IN THIS CASE THE IONIC STATE OF THE ELEMENT IS THE CONTROLLINGFACTOR. ADSORPTION OF ZR BY THE ANION EXCHANGER IS SMALL FROM AQ. SOLNS. OF HNO SUB3. ADDN. OF AN ORG. SOLVENT DECREASES THE SWELLING OF THE EXCHANGER WHICH DECREASES THE ADSORPTION STILL MORE. AN INCREASE IN THE VOL. OF THE ORG. SOLVENT ABOVE 60PERCENT BRINGS ABOUT AN INCREASE IN THE ADSORPTION DUE TO THE EXTN. OF THE ELEMENT INTO THE RESIN PHASE WHICH IS ENRICHED WITH RESPECT TO THE MORE POLAR SOLVENT.

UNCLASSIFIED

Public Health, Hygiene and Sanitation

USSR UDC 612.821:[378.662+378.657

PONOMARENKO, I. I., and BELYAVSKAYA, V. I., Institute of Hygiene imeni F. F. Erisman

"Comparison of Physiological Changes in Students of Technical and Biological Faculties During the School Day"

Moscow, Gigiyena Truda i Professional'nyye Zabolevaniya, No 7, 1971, pp 33-36

Abstract: Various physiological functions (arterial pressure, pulse rate, reflexes, etc.) and indexes of mental fitness (arithmetic problems, attention span, etc.) were studied in two groups of students at the Moscow Wood Technology Institute. One studied the biological sciences -- soil science, silviculture, plant physiology, etc.; the other studied subjects pertaining to the automation and mechanization of the timber industry -- mathematics, physics, technology of metals, etc. The investigations were carried out during the fall semester before and after classes. At the end of the school day the biology students' performance deteriorated in only one respect, i.e., the rate at which the problems were solved, whereas the technology students' performance deteriorated in all respects, i.e., the rate at which the problems were solved, number of mistakes made, and attention

USSR

PONOMARENKO, I. I., and BELYAVSKAYA, V. I., Gigiyena Truda i Professional'-nyye Zabolevaniya, No 7, 1971, pp 33-36

span. The authors believe the results of psychological tests plus the changes observed in physiological functions are sensitive enough to permit differentiation of types of intellectual work and justify reorganization of the teaching process to prevent impairment of the students' health.

2/2

Composite Materials

USSR UDC 620.183:620.17

KIDIN, I. N., LIZUNOV, V. I., and BELYAVSKAYA, V. M., Moscow Institute of Steel and Alloys"

The Role of Structural Components in Hardening Natural Composite Materials"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 7, 1973, pp 136-140

Abstract: The dependence of the yield point and of the ultimate strength of steel 60 and of steel U8 on the interlaminate distance in sorbite was evaluated. Steel with a fibrous structure possesses a higher hardening factor in deformation than steel with a chaotic disposition of cementite particles. When calculating the strength of a fibrous composite material, not only the strength of the particles of the hardening phase must be accounted for, but also the effect of hardening the matrix at the expense of diminution domains of barrierless motion of dislocations. A good correlation between the calculated and actual strength of the composite results in equal strength of the matrix and iron with the size of cells equal to the interlaminate distance in the steel. Three figures, eight bibliographic references.
1/1

Thermomechanical Treatment

USSR

KIDIN, I. N., LIZUNOV, V. I., BELYAVSKAYA, V. M., and YEREMENKO, V. I., Moscow Institute of Steel and Alloys

"Study of the Mechanism of Hardening of Wire by Electrothermomechanical Treatment"

Moscow, IVUZ Chernaya Metallurgiya, No 3, 1971, pp 129-132.

Abstract: The influence of electrothermal and electrothermomechanical treatment on the structure and properties of wire made of type 60 steel was studied. The electrothermomechanical treatment was found to produce a higher tensile strength (130 kg/mm^2) while retaining a high level of ductility. Electrothermal treatment produced a tensile strength of 126 kg/mm^2, while ordinary patenting resulted in a strength of 117 kg/mm^2. Electrothermal and electrothermomechanical treatment significantly improve the structure.

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Thermomechanical Treatment

USSR

KIDIN, I. N., LIZUNOV, V. I., BELYAVSKAYA, V. M., and YEREMENKO, V. I., Moscow Institute of Steel and Alloys

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Abstract: The influence of electrothermal and electrothermomechanical treatment on the structure and properties of wire made of type 60 steel was studied. The electrothermomechanical treatment was found to produce a higher tensile strength (130 kg/mm^2) while retaining a high level of ductility. Electrothermal treatment produced a tensile strength of 126 kg/mm^2, while ordinary patenting resulted in a strength of 117 kg/mm^2. Electrothermal and electrothermomechanical treatment significantly improve the structure.

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AA0052550 Belyavskiy, A.I. UR 0482

Soviet Inventions Illustrated, Section I Chemical, Derwent, 2/70

243822 EXTRUDER has screw (1) in a sleeve (3) which can ride along its axis and is permanently coupled to the melt line (7). The far end of the line coupled to a fixed disc (9) which can travel along the disc device and improve the quality of the product by controlling the melt pressure. Polymer crush runs along line (12) in between the rotary disc (13) and fixed disc (9) and is there melted, fed along the line (8) to the screw loading zone. This rotates and forces and portions molten polymer through the nozzle (6) and flexible line (7) into the mould lock (not shown). The pressure of the melt tends to pulsate due to irregularities in feed, load etc., parameters. When melt pressure rises between screw (1) and nozzle (6), the sleeve (3) slides along the screw and posts (4) to the right thus contracting the spring (5). The fixed disc

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travels with the sleeve so as to reduce the clearance between the melting face of the fixed disc (9) and that of the rotary disc (13), and thus diminish the portion of crush reaching this gap. When pressure falls, the reverse occurs. This extruder is particularly suitable for the prod. of better quality fibres. 18.3.68. as 1226635/23-5, VOLKOV, A.A. et al. Synthetic Fibres Res. Inst. (30.9.69) Bul. 17/14.5.69. Class 39a^4 Int Cl. B 29f

Volkov, A. A.; Belyavskiy, A. I.; Il'in, V. G.
Vsesoyuznyy Nauchno--Issledovatel'skiy Institut Mashin dlya Proizvodstva Sinteticheskikh Volokon

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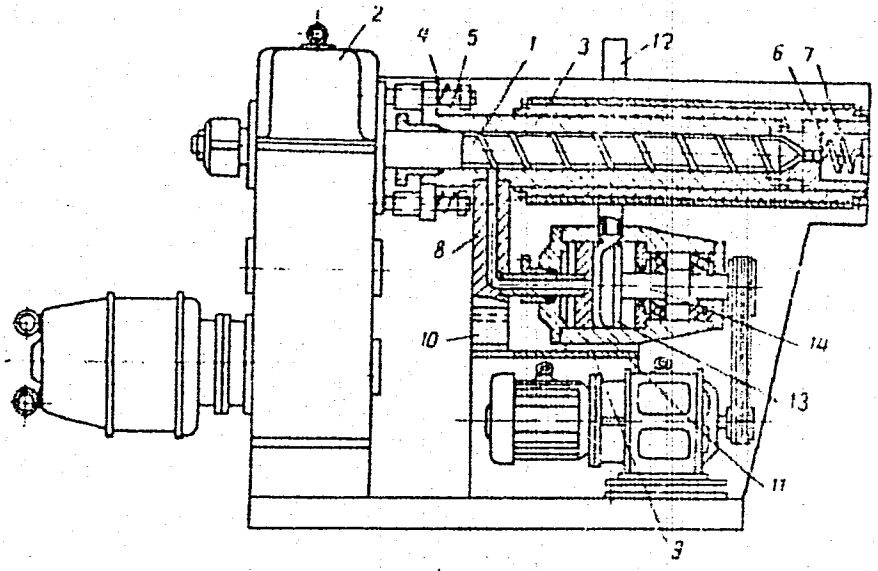

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19821213

1/2 021 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--DISTRIBUTION OF SOME ELEMENTS IN THE BOTTOM SEDIMENTS OF THE NORTHWESTERN ATLANTIC OCEAN -U-

AUTHOR-(03)-BELYAVSKIY, G.A., MITROPOLSKIY, O.YU., ROMANOV, V.I.

COUNTRY OF INFO--USSR, ATLANTIC OCEAN

B

SOURCE--DOPOV. AKAD. NAUK UKR. RSR, SER. B 1970, 32(3), 198-202

DATE PUBLISHED-------70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--GEOGRAPHIC LOCATION, OCEAN BOTTOM SAMPLING, CHEMICAL COMPOSITION, POTASSIUM, SODIUM, CALCIUM, BARIUM, VANADIUM, NICKEL, COBALT, IRON, CHROMIUM, STRONTIUM, TITANIUM, BERYLLIUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3004/1726 STEP NO--UR/0442/70/032/003/0198/0202

CIRC ACCESSION NO--AT0131992

UNCLASSIFIED

2/2 021 UNCLASSIFIED PROCESSING DATE--13NOV70
CIRC ACCESSION NO--AT0131992
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DISTRIBUTION OF K, NA, CA, BA, V, NI, CO, SR, MG, FE, CR, TI, BE, AND MN BOTTON SEDIMENTS WAS STUDIED FOR 4 SECTIONS SITUATED IN THE ZONES OF THE GULF STREAM, THE LABRADOR CURRENT, AND THEIR INTERSECTION. THE SPATIAL PATTERN OF ELEMENT DISTRIBUTION WAS AFFECTED BY BOTH THE LABRADOR CURRENT AND THE GULF STREAM, WHICH SORTED AND TRANSPORTED PRODUCTS OF ROCK DISINTEGRATION, DELIVERED FROM CONTINENTS, AND PROMOTED MIGRATION AND PPTN. OF BIOGENIC, CHEMOGENIC, LITHOGENIC, AND HYDROGENIC MATERIAL. FACILITY: INST. GEOL. NAUK, KIEV, USSR.

UNCLASSIFIED

1/2 006 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--CHARACTER OF ALKALINE EARTH AND ALKALI METAL DISTRIBUTION IN BOTTOM SEDIMENTS OF THE NORTHWESTERN PART OF ATLANTIC OCEAN -U-
AUTHOR-(03)-BELYAVSKIY, G.A., MITROPOLSKIY, A.YU., ROMANOV, V.I.

COUNTRY OF INFO--USSR, ATLANTIC OCEAN

SOURCE--GEOL. ZH. (UKR. ED.) 1970, 30(2), 142-9

DATE PUBLISHED-------70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--ALKALINE EARTH METAL, OCEAN BOTTOM, GEOGRAPHIC LOCATION, BOTTOM SEDIMENT

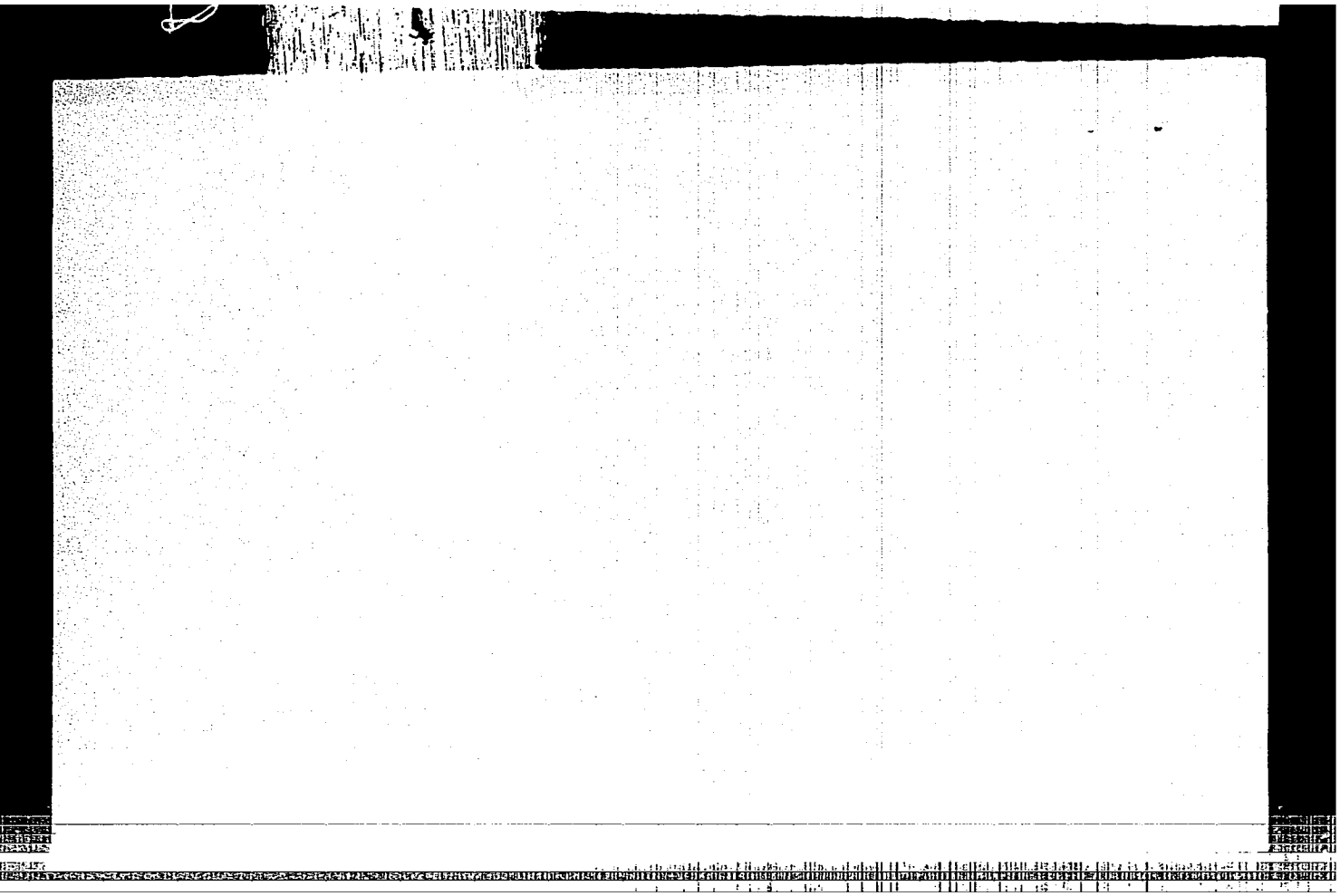
CONTROL MARKING--NO RESTRICTIONS

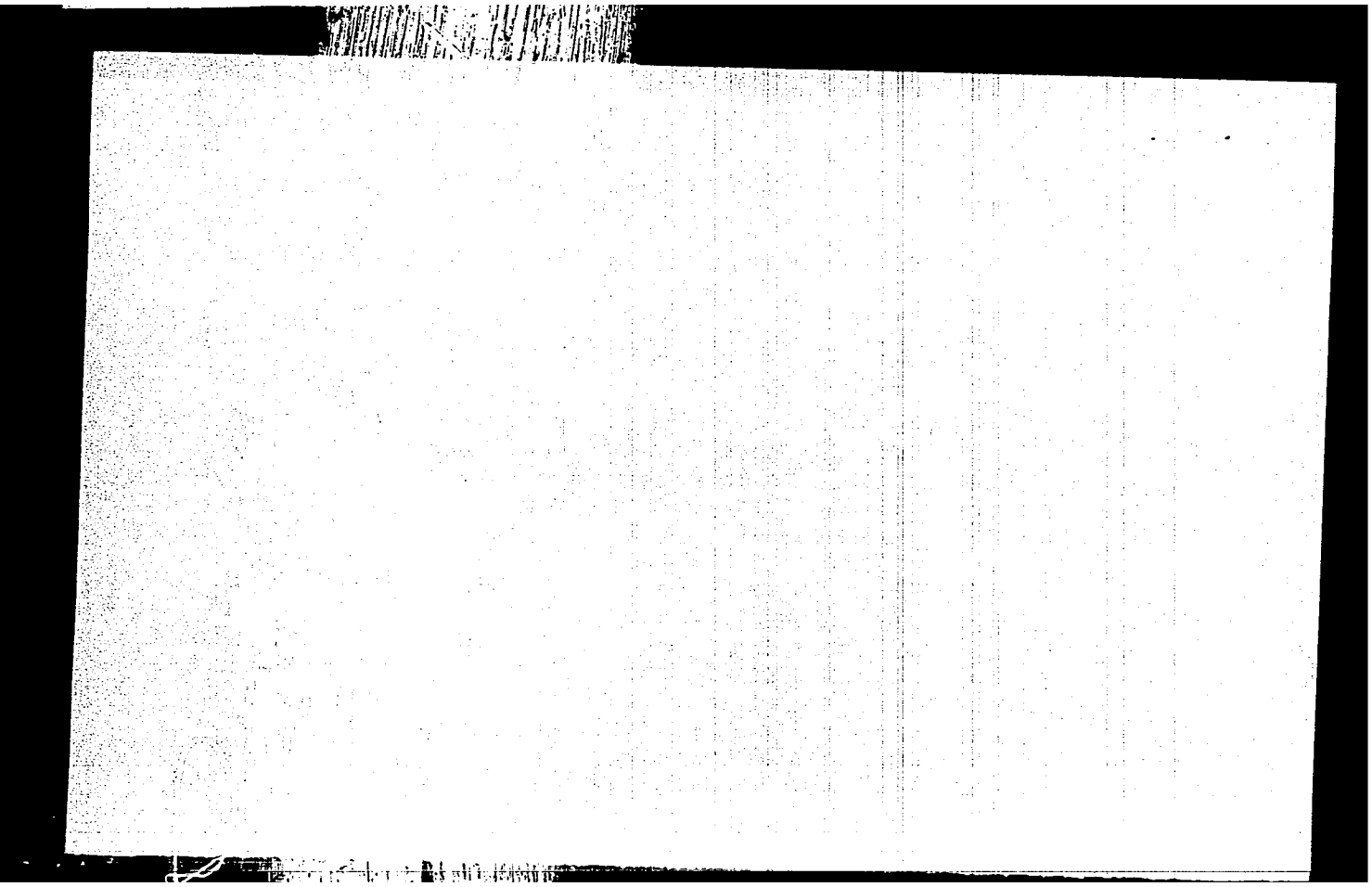
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3005/0960 STEP NO--UR/0008/70/030/002/0142/0149

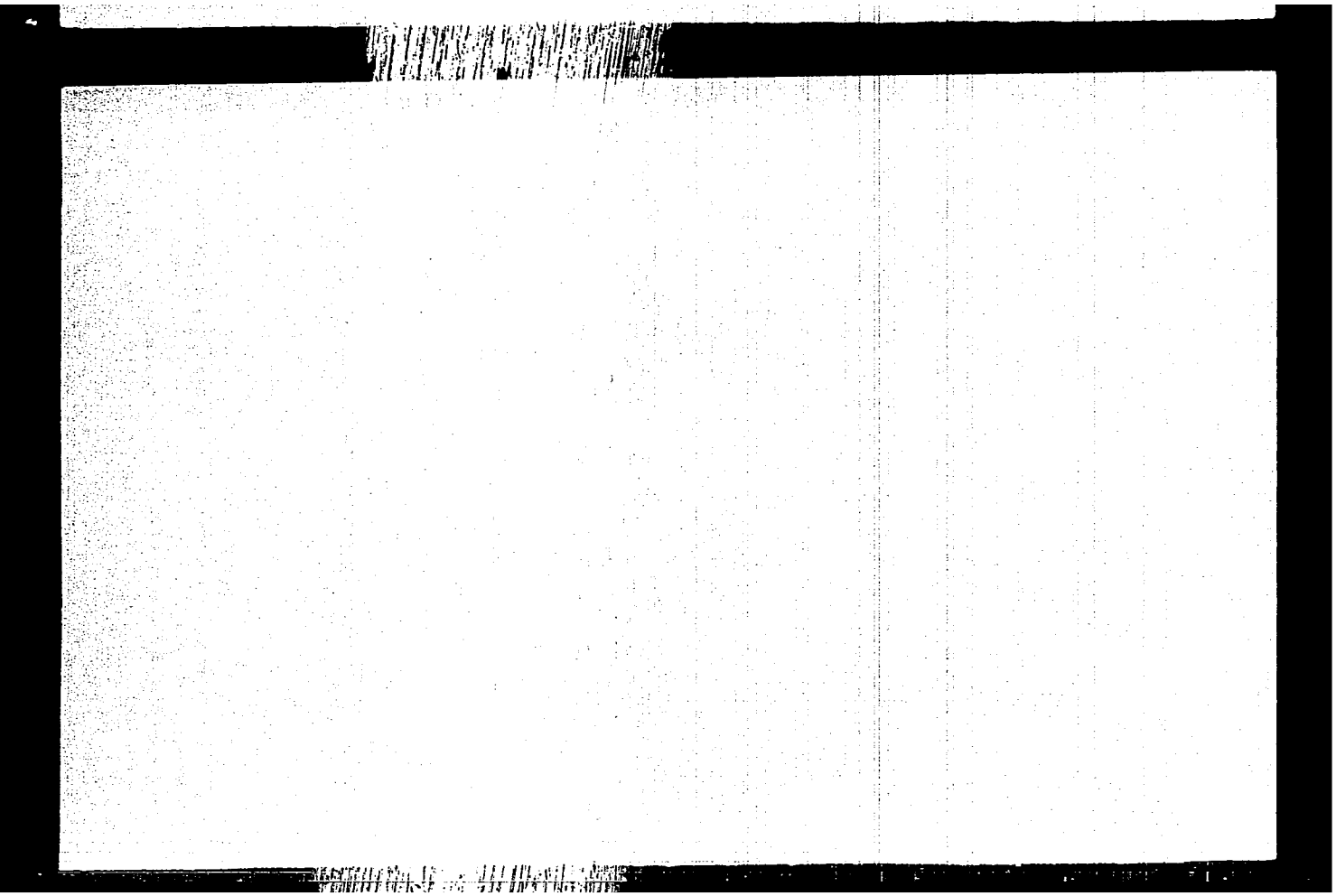
CIRC ACCESSION NO--AP0133046
UNCLASSIFIED

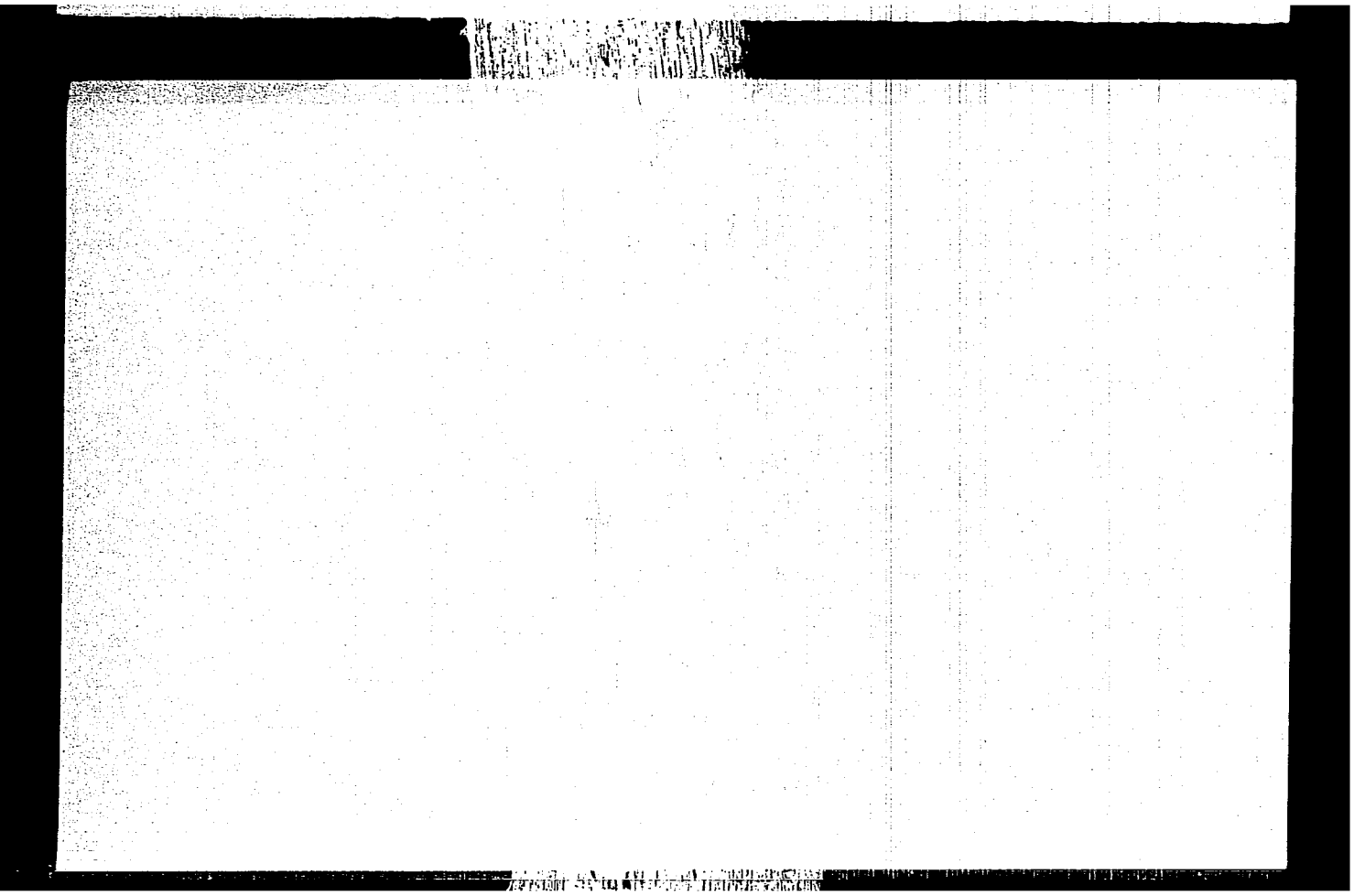
2/2 006 UNCLASSIFIED PROCESSING DATE--04DEC70
CIRC ACCESSION NO--AP0133046
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SAMPLES OF BOTTOM SEDIMENTS WERE TAKEN IN 4 SECTIONS WHICH ARE DESCRIBED. ALL ANALYZED ELEMENTS WERE SEPD. INTO 2 GROUPS ACCORDING TO THEIR GENETIC CHARACTERISTICS: (1) CA, SR, BA, MG, AND K AND (2) BE AND NA. THE BIOGENIC AND CHEMOGENIC FACTORS PLAYED THE MAIN ROLE IN DISTRIBUTION OF ELEMENTS OF THE 1ST GROUP. THE DELIVERY AND REDISTRIBUTION OF TERRIGENOUS MATERIAL PLAYED THE MAIN ROLE IN BEHAVIOR OF ELEMENTS OF THE 2ND GROUP. THE ELEMENTS OF THE 1ST GROUP ARE DISTRUBUTED MORE OR LESS UNIFORMLY IN THE STUDIED AREA WITH SMOOTH VARIATION OF THEIR CONTENT IN VERTICAL DIRECTION. THE ACTIVITY OF LABRADOR CURRENT AND THAT OF GULF STREAM, WHICH SORTED AND TRANSPORTED THE PRODUCTS, OF ROCK DISINTEGRATION, DELIVERED FROM CONTINENTS, AFFECTED STRONGLY THE DISTRIBUTION OF ELEMENTS OF THE 2ND GROUP. FACILITY: INST. GEOL. NAUK, KIEV, USSR.

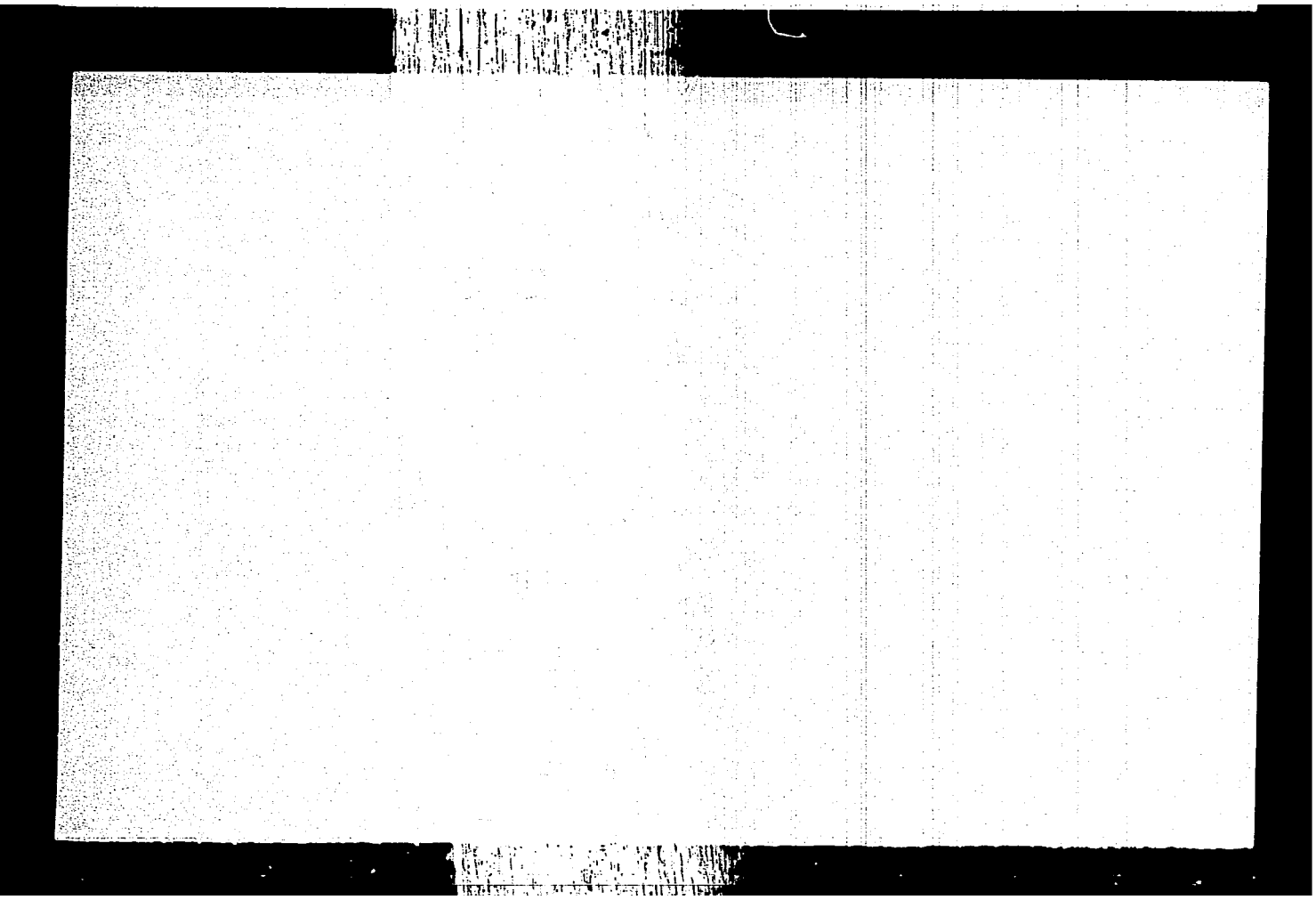
UNCLASSIFIED

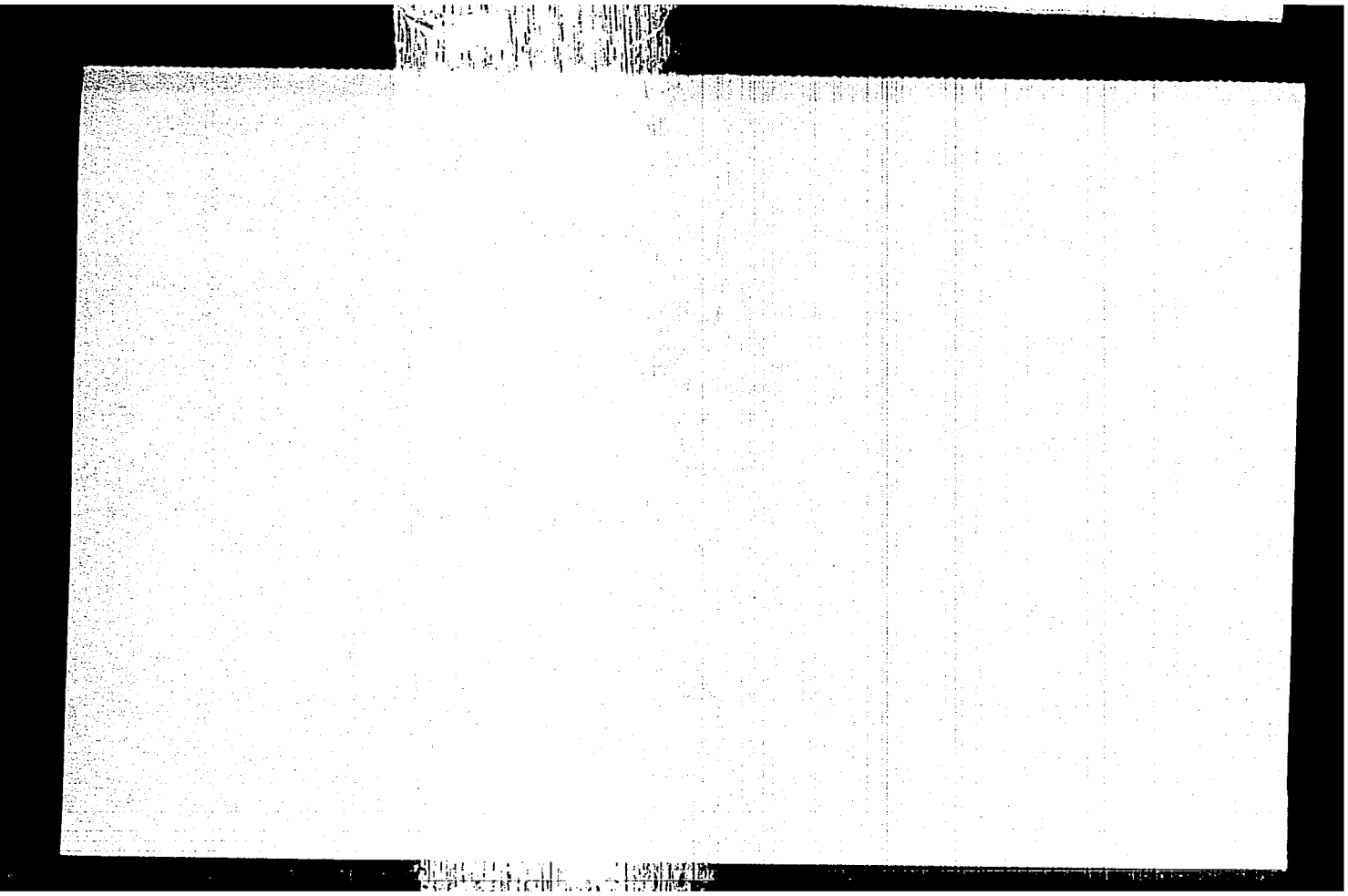


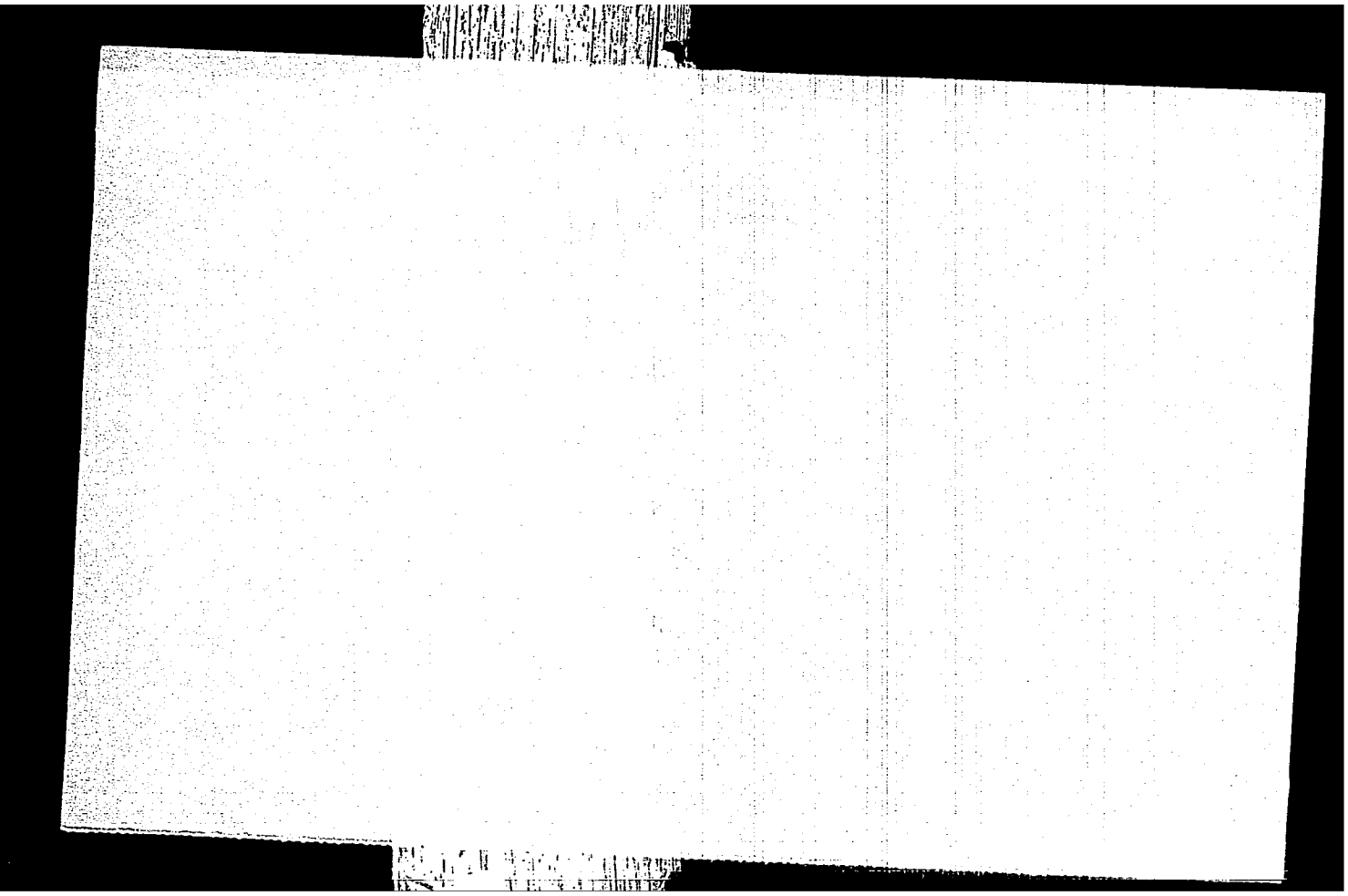


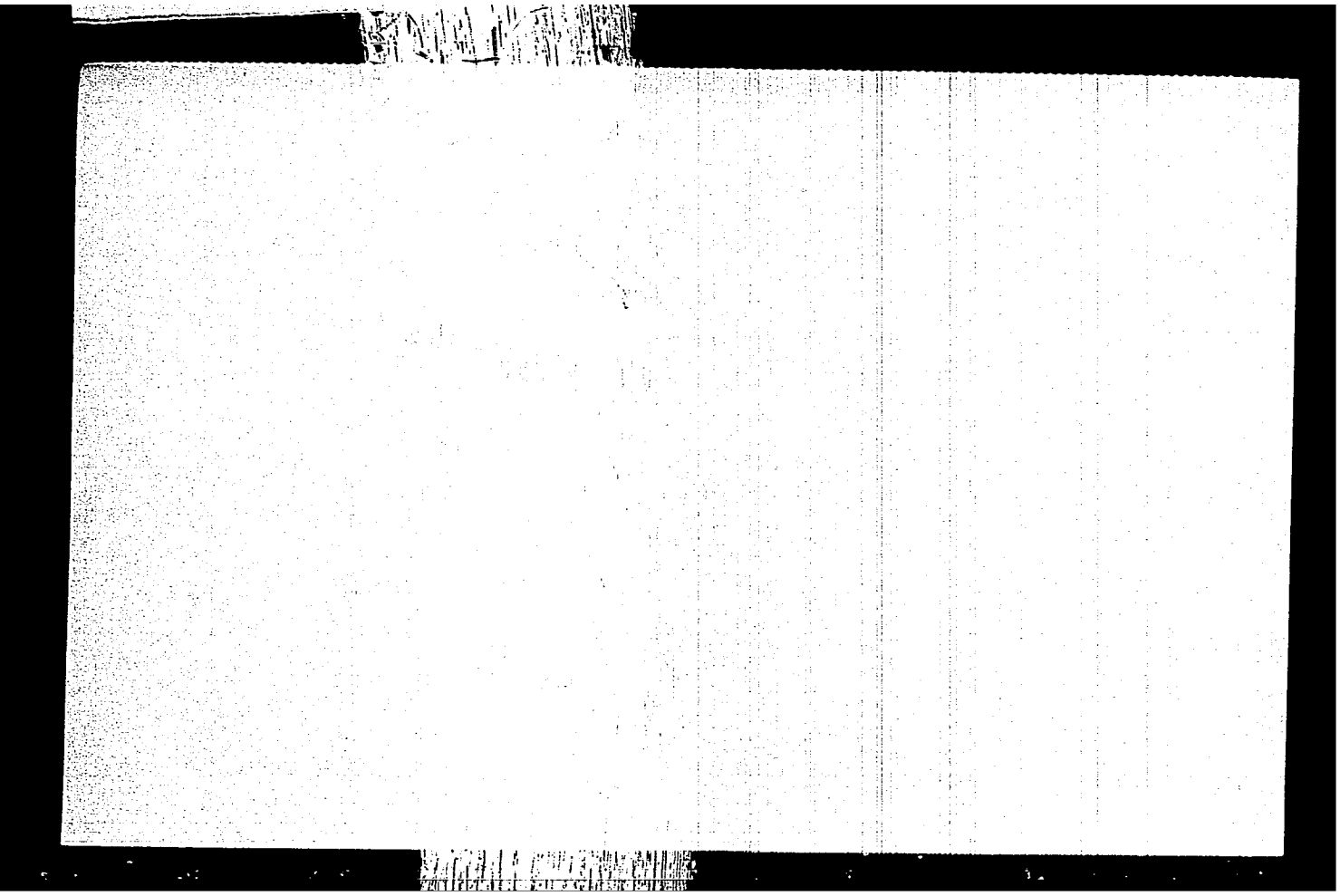


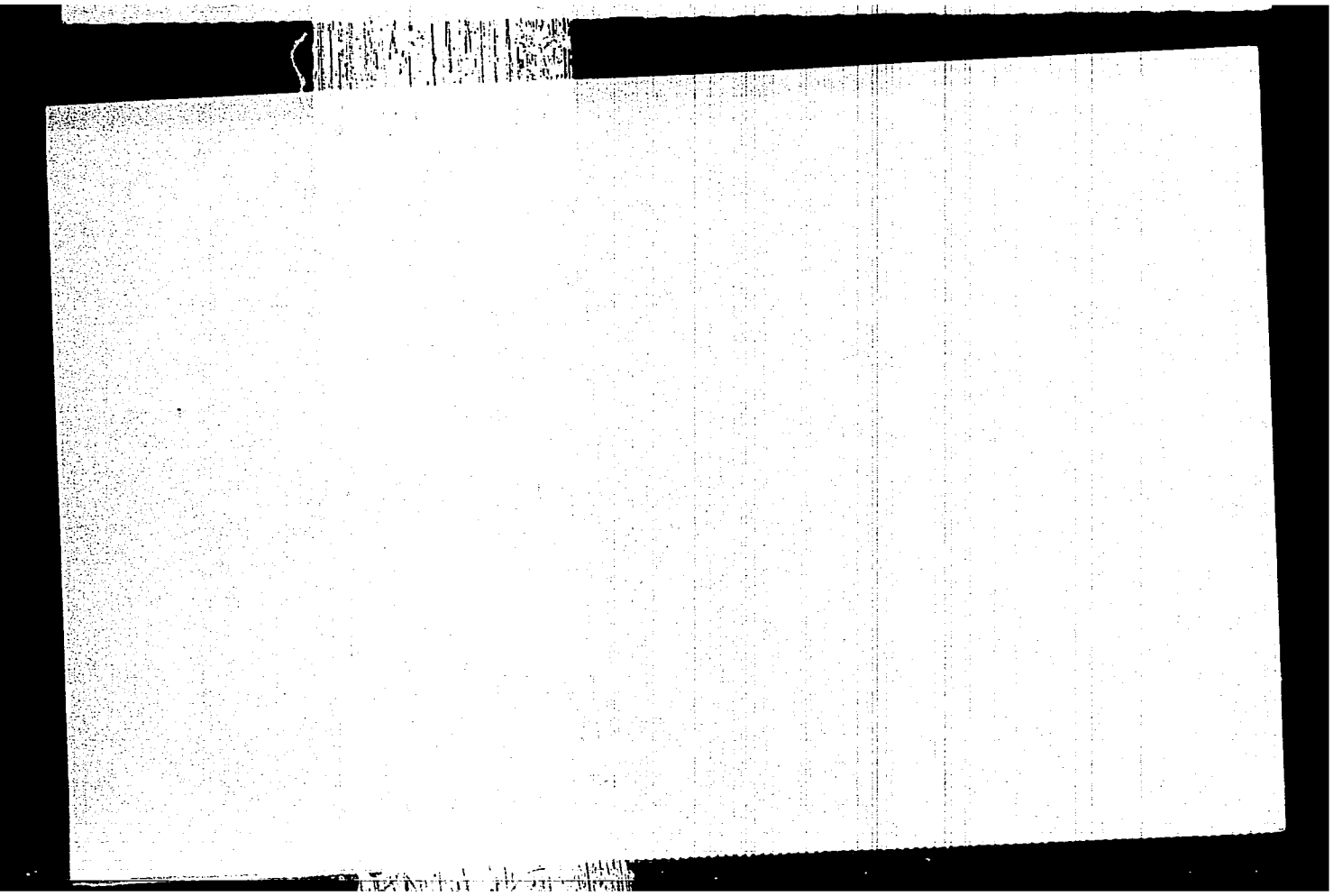


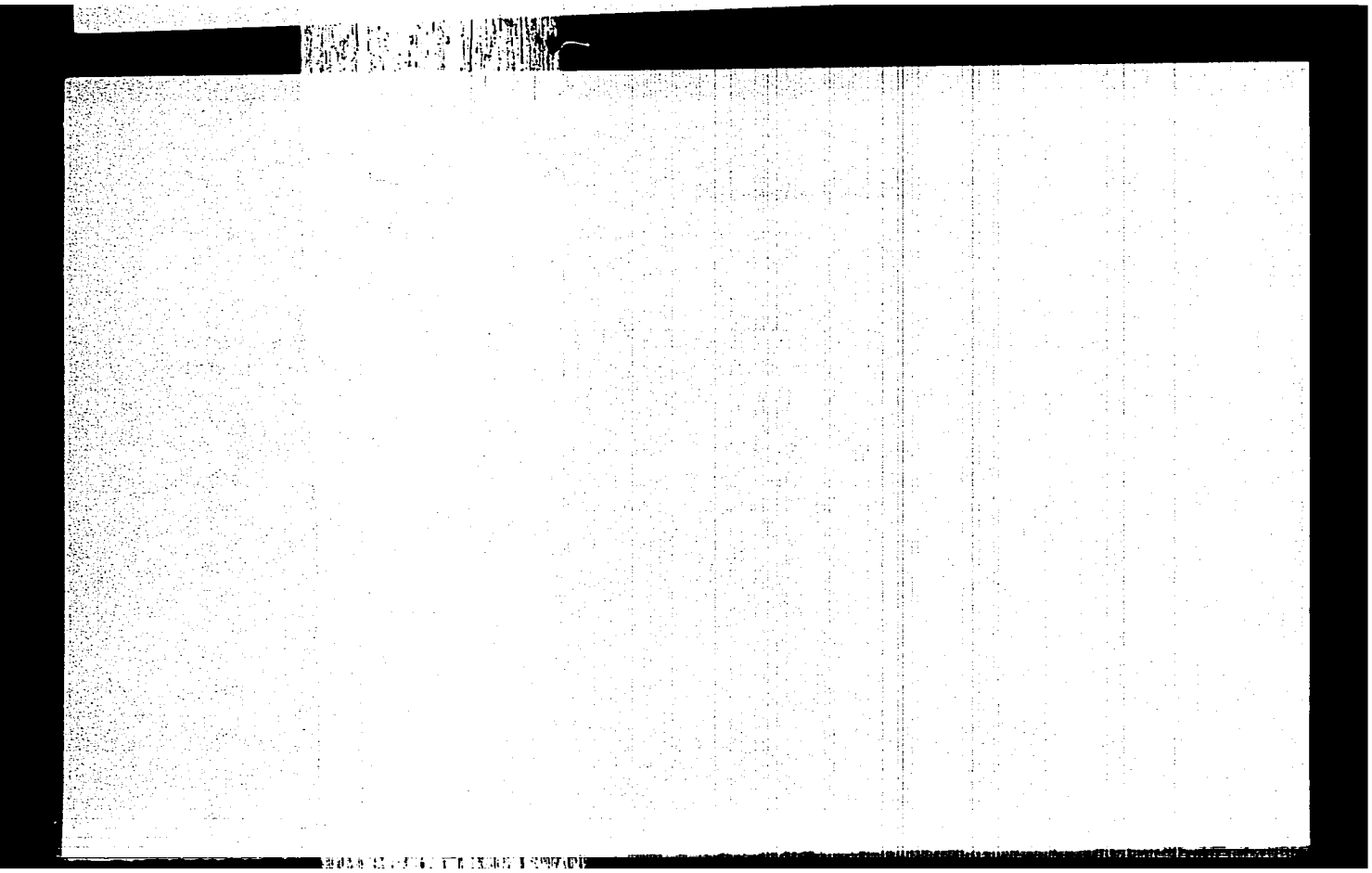


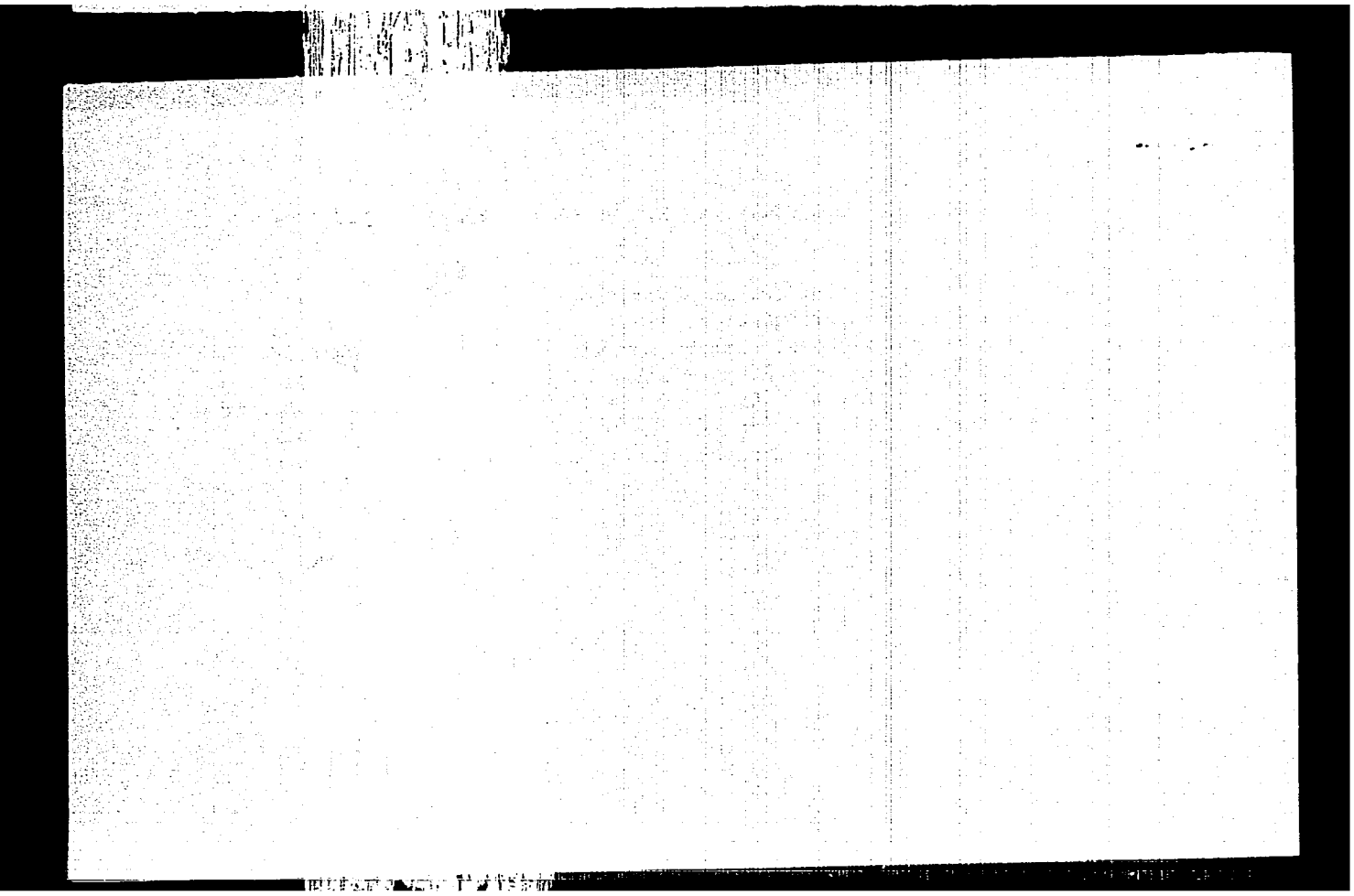


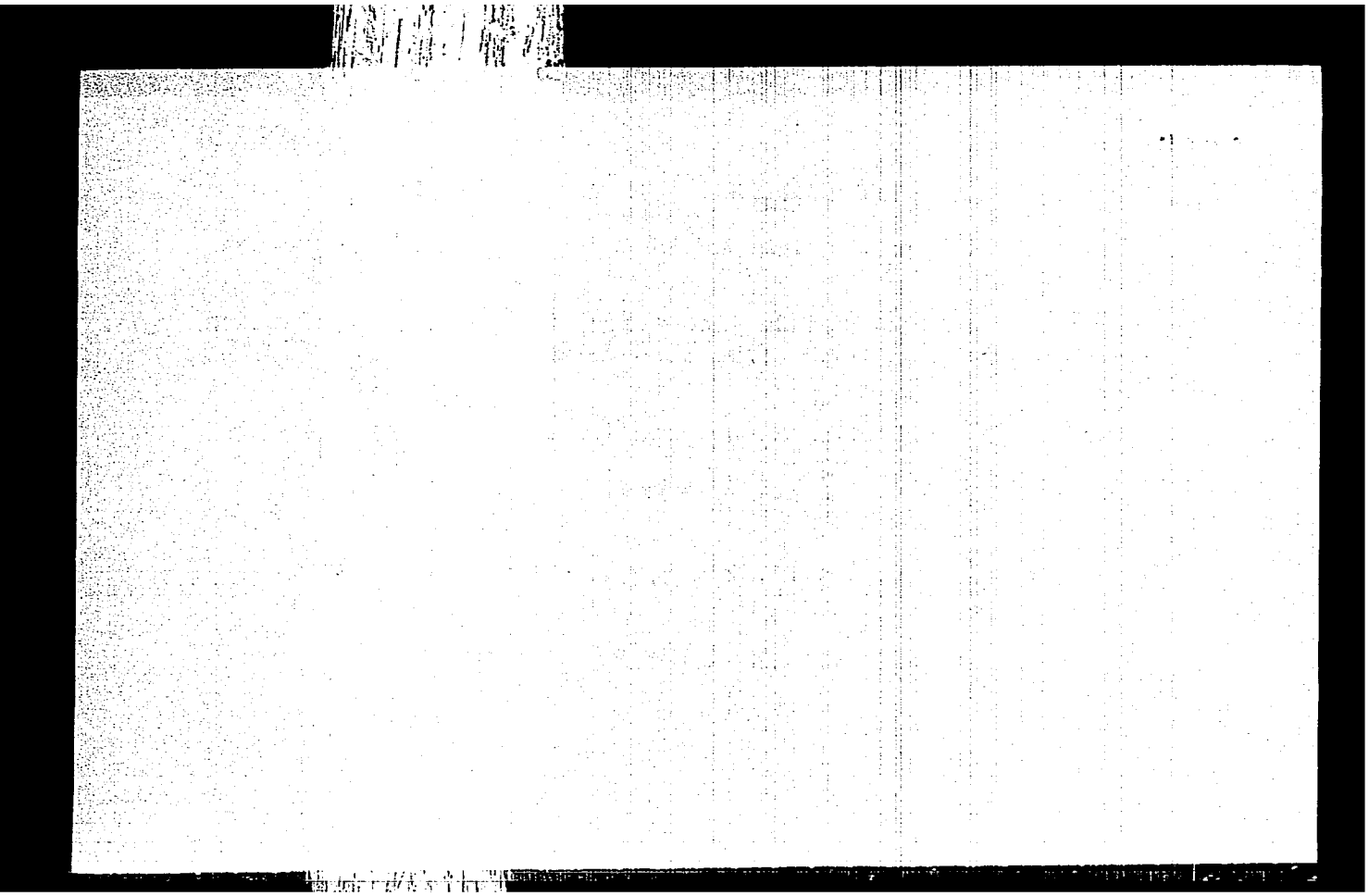


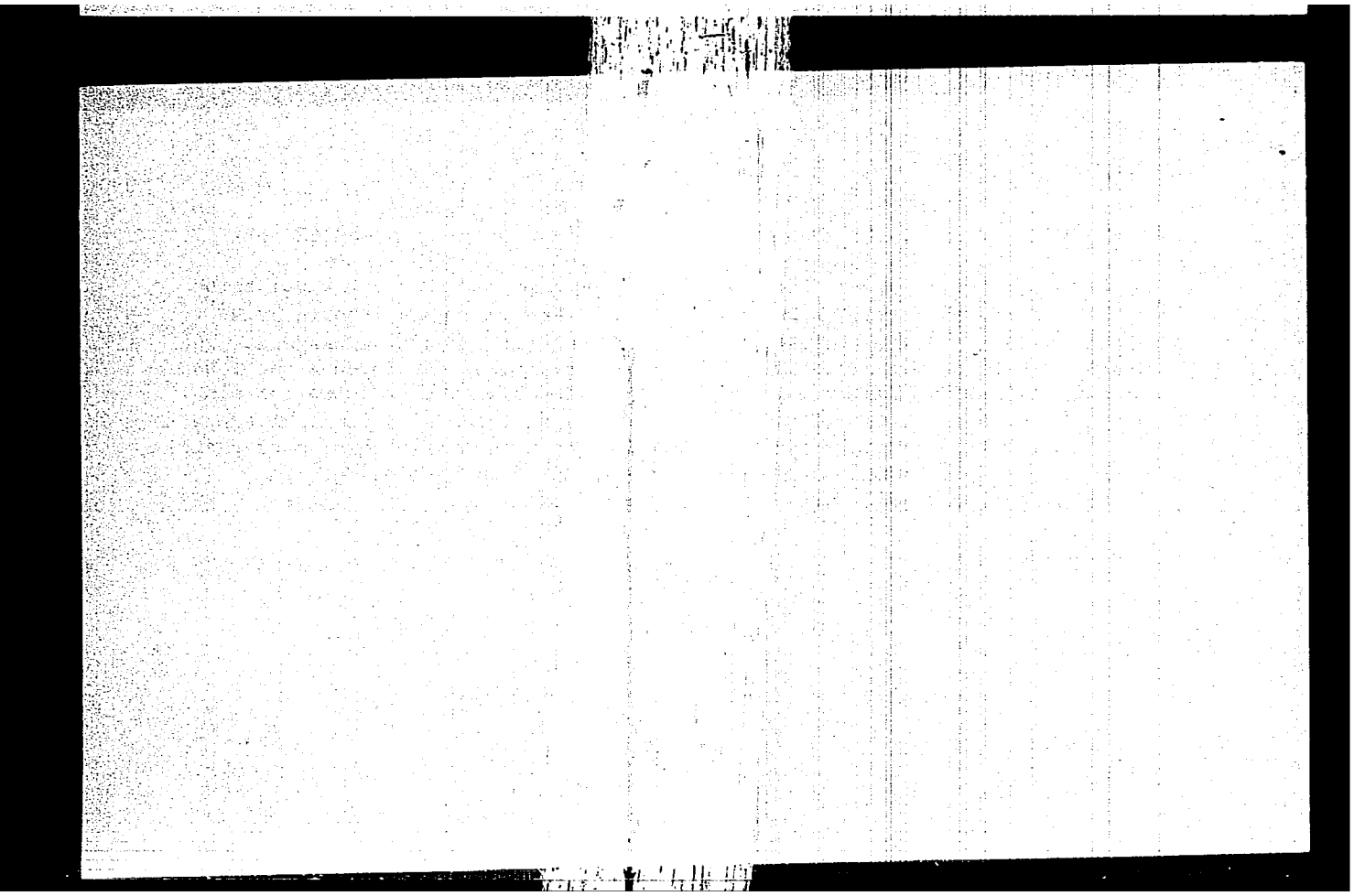


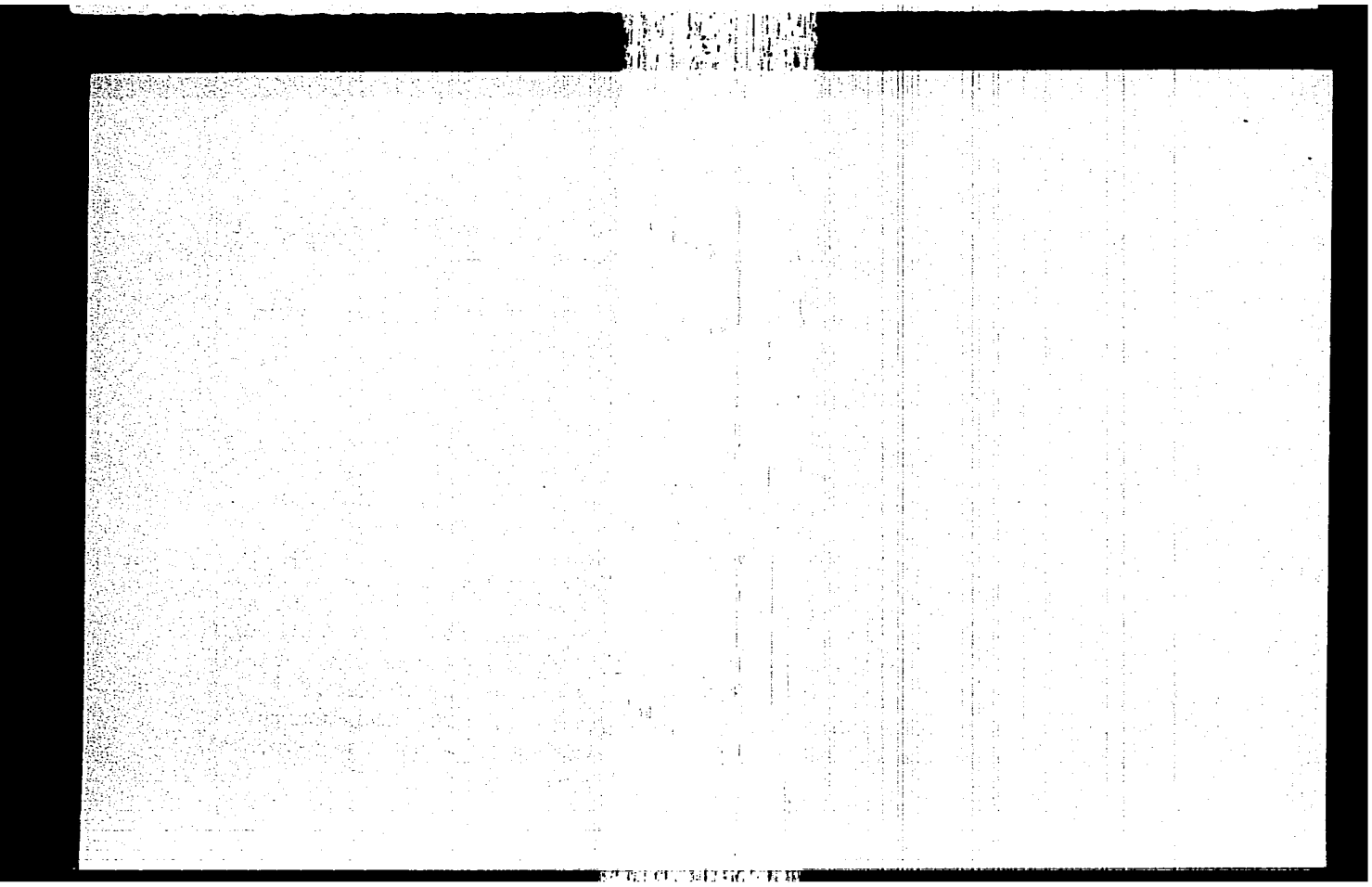


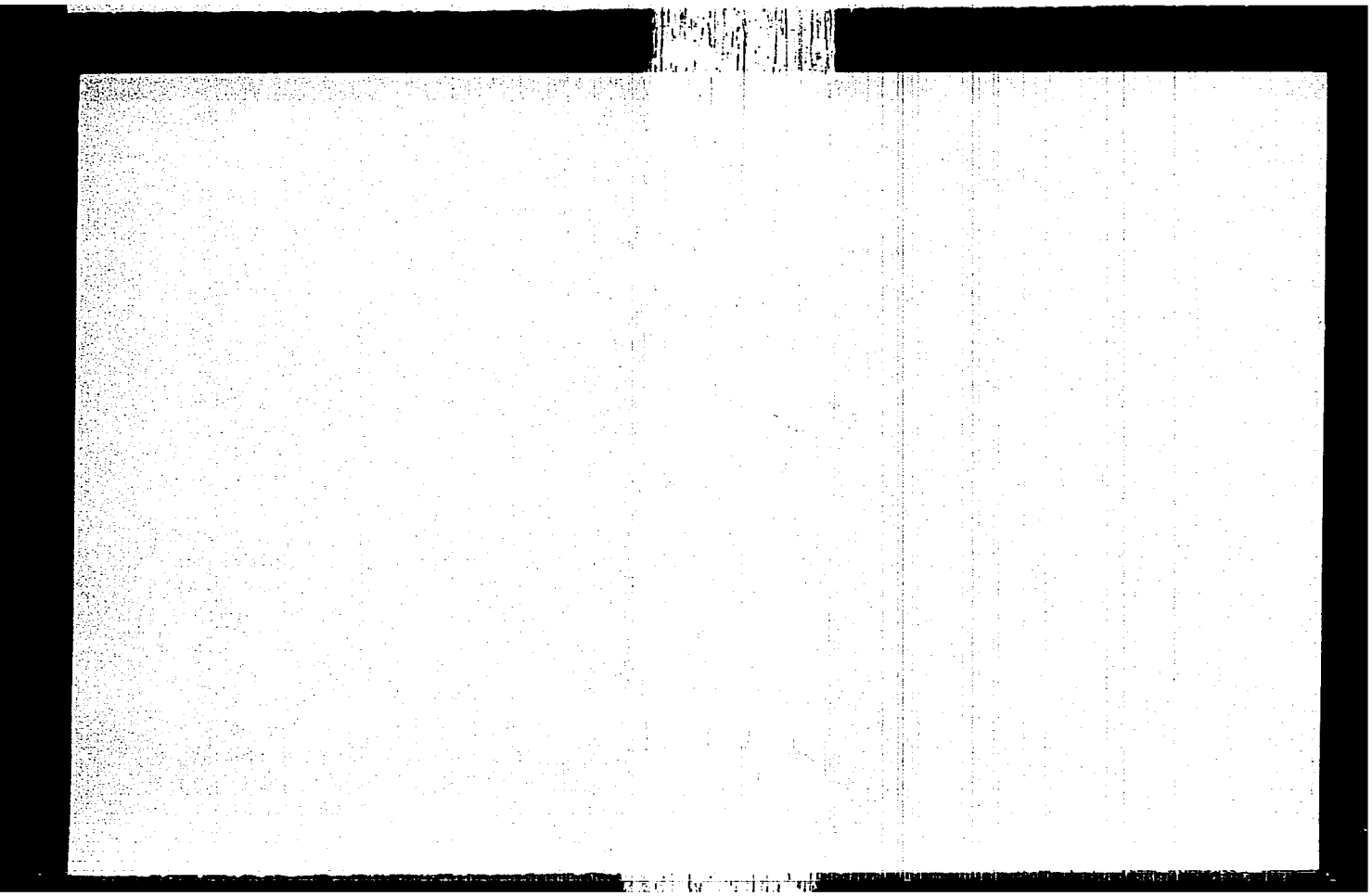


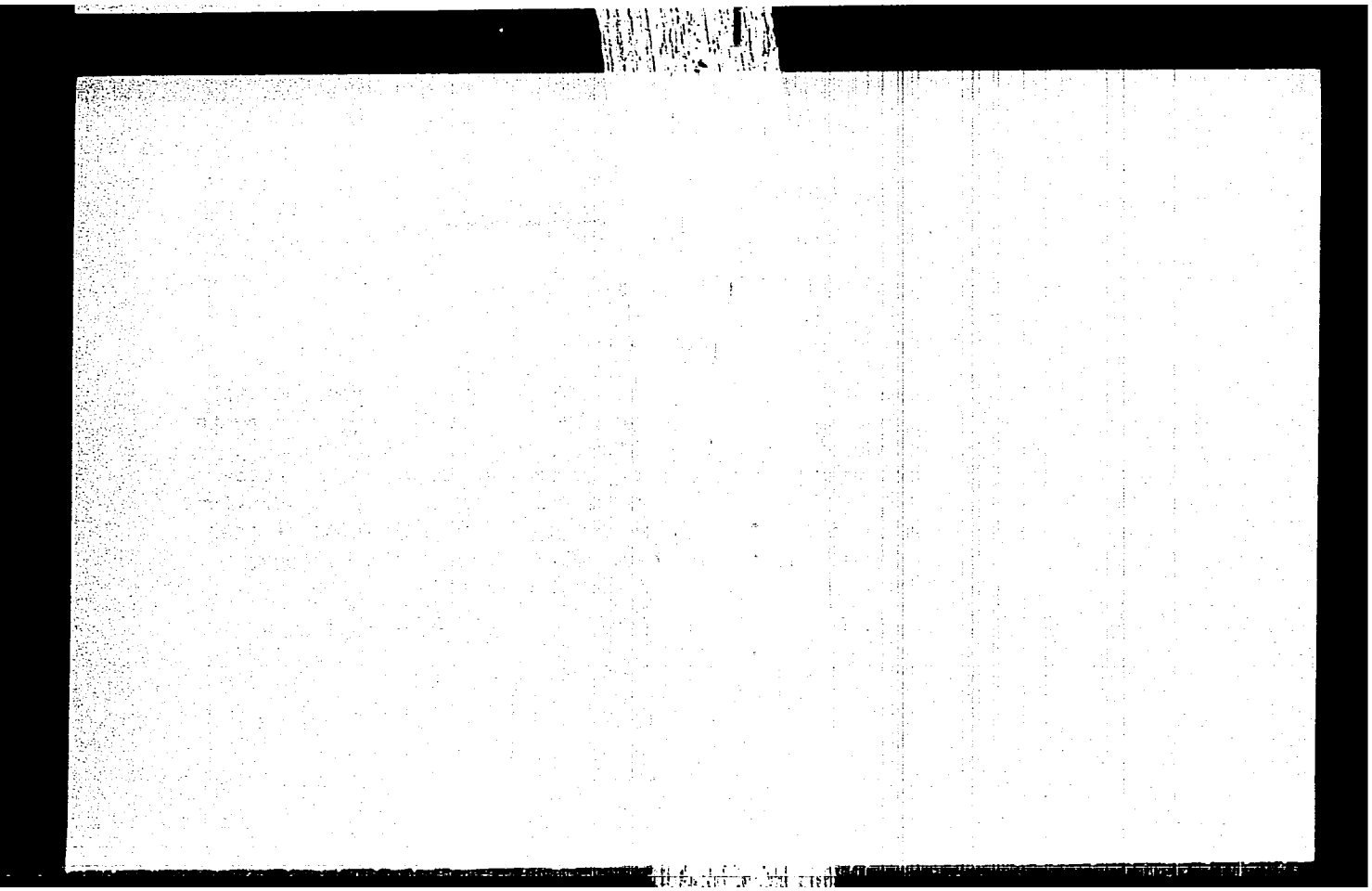


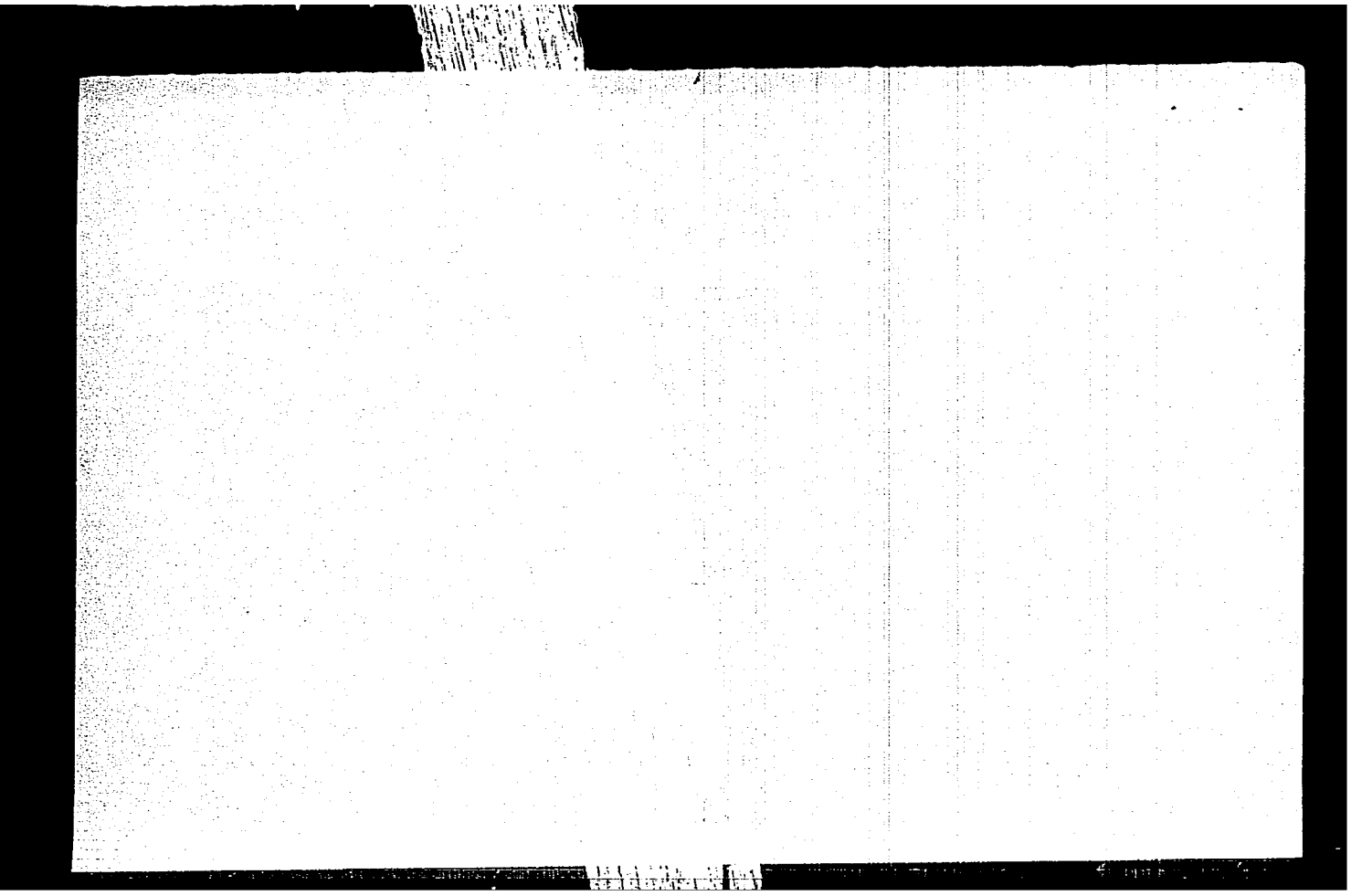


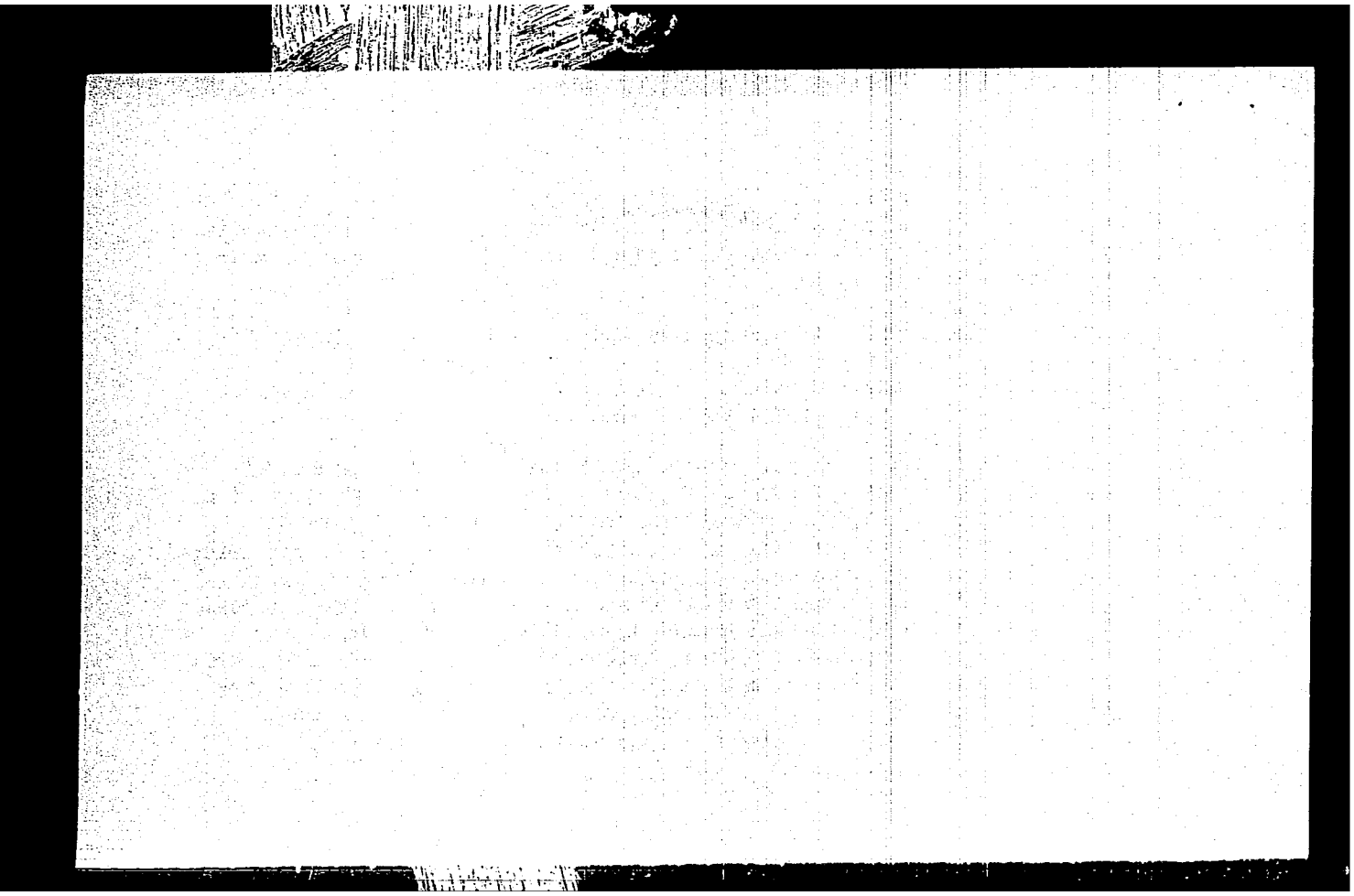


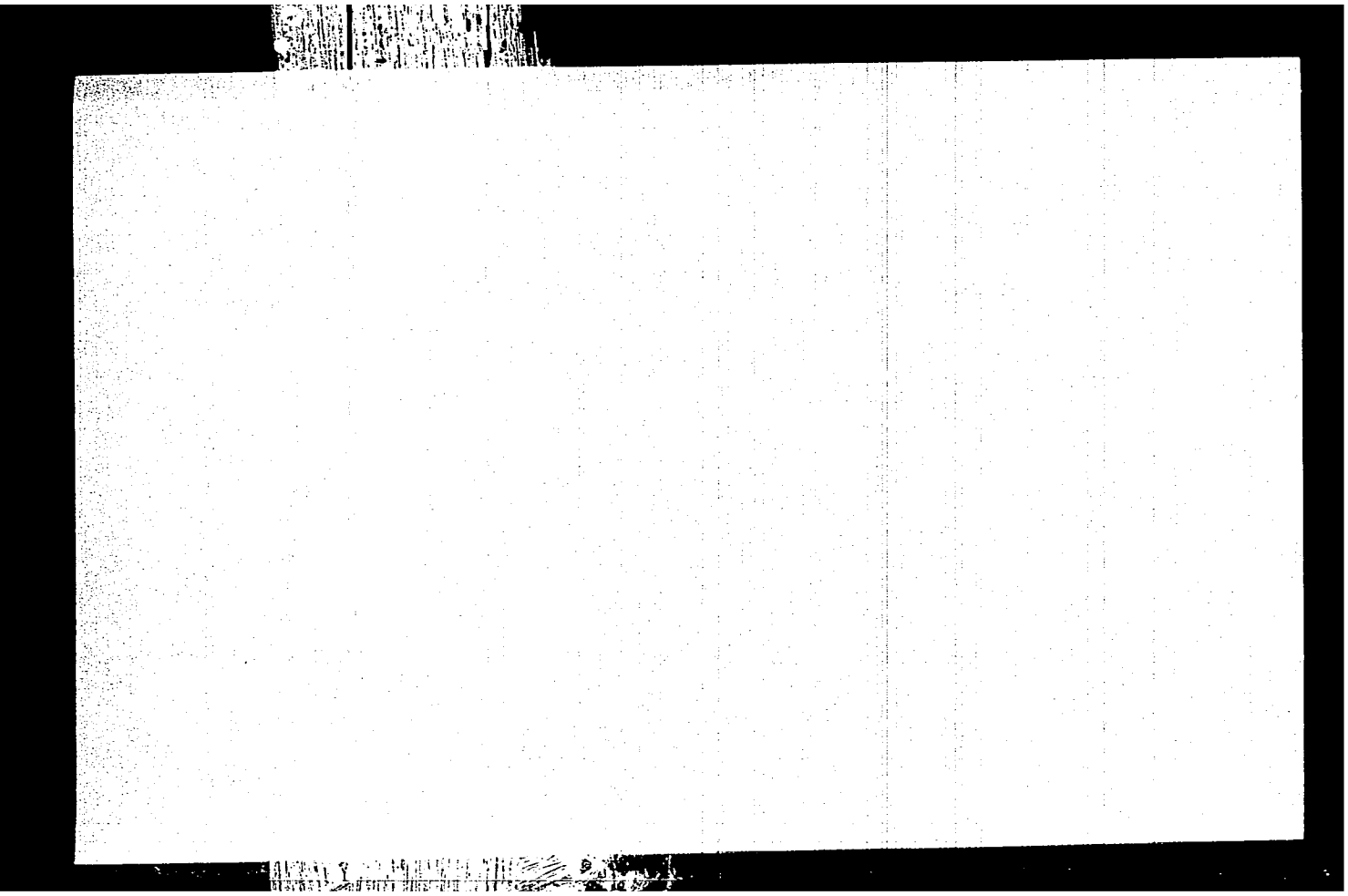


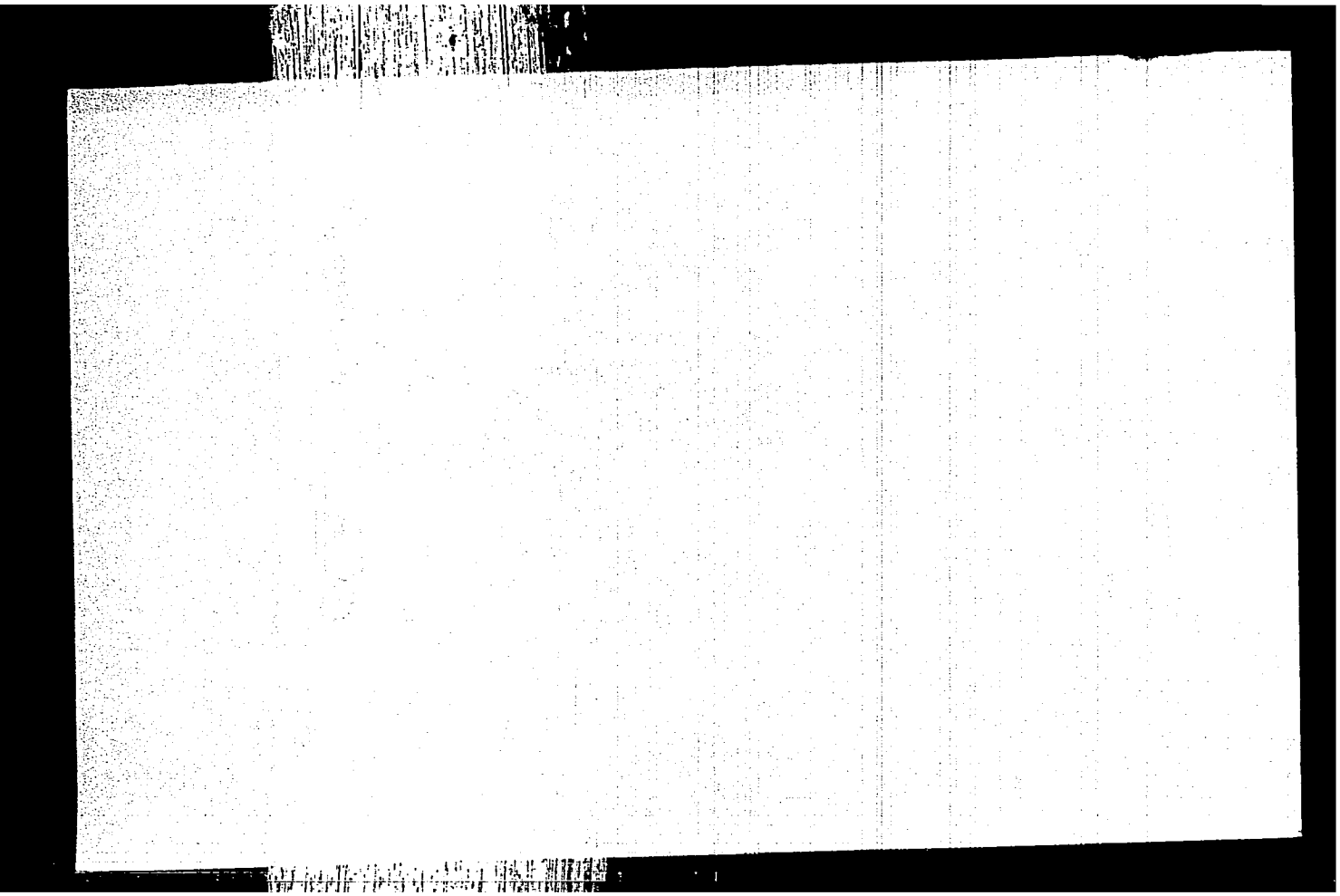


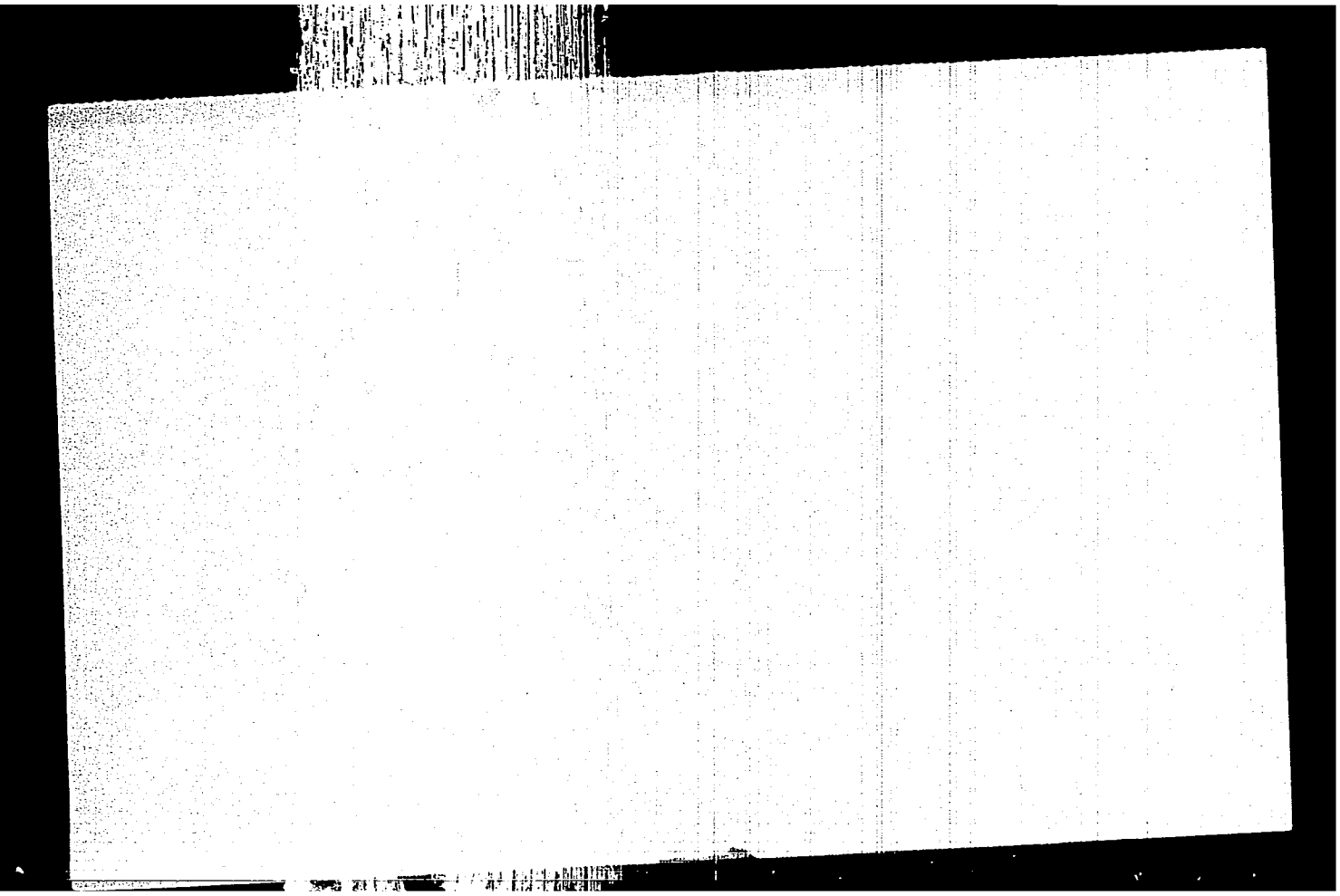


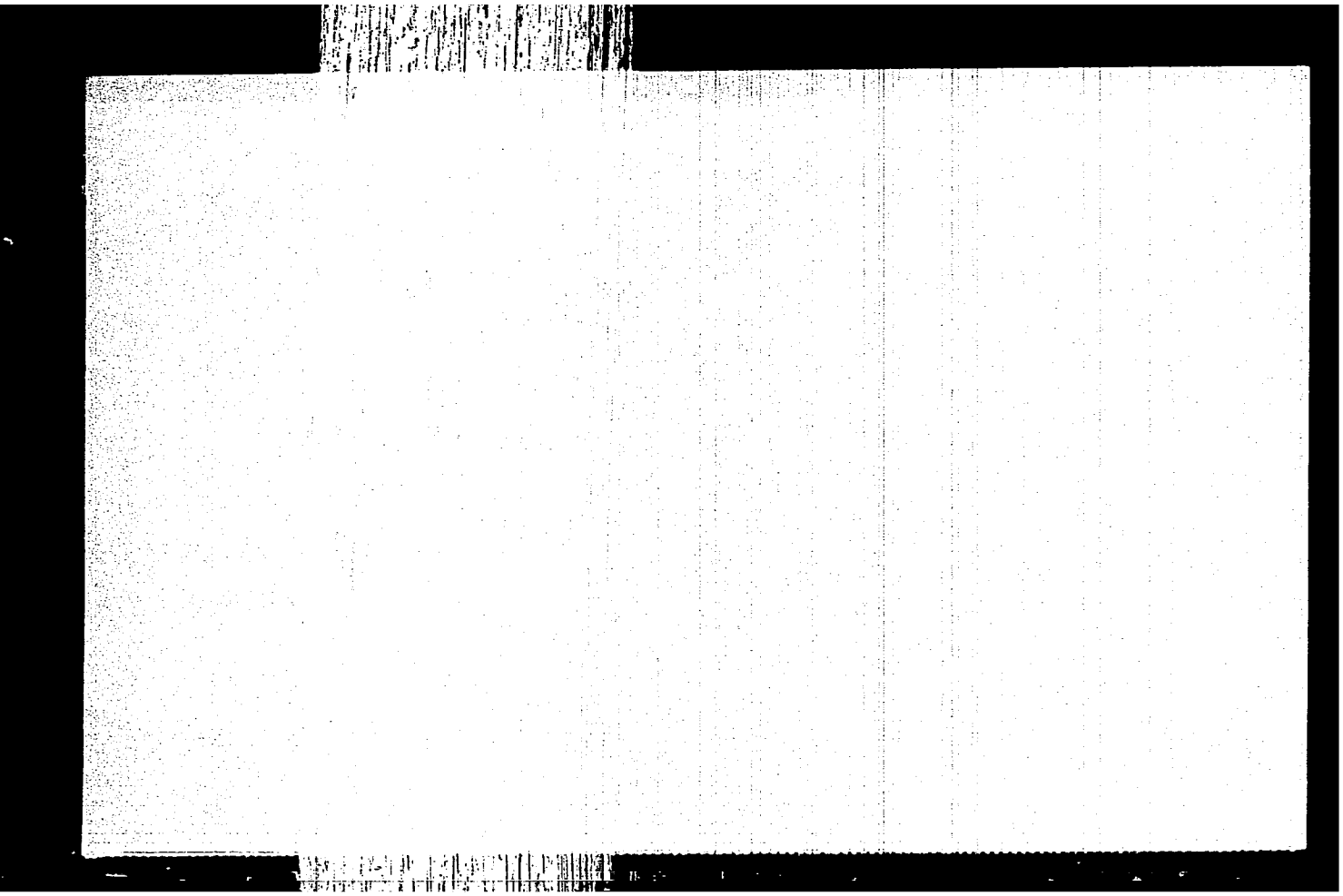


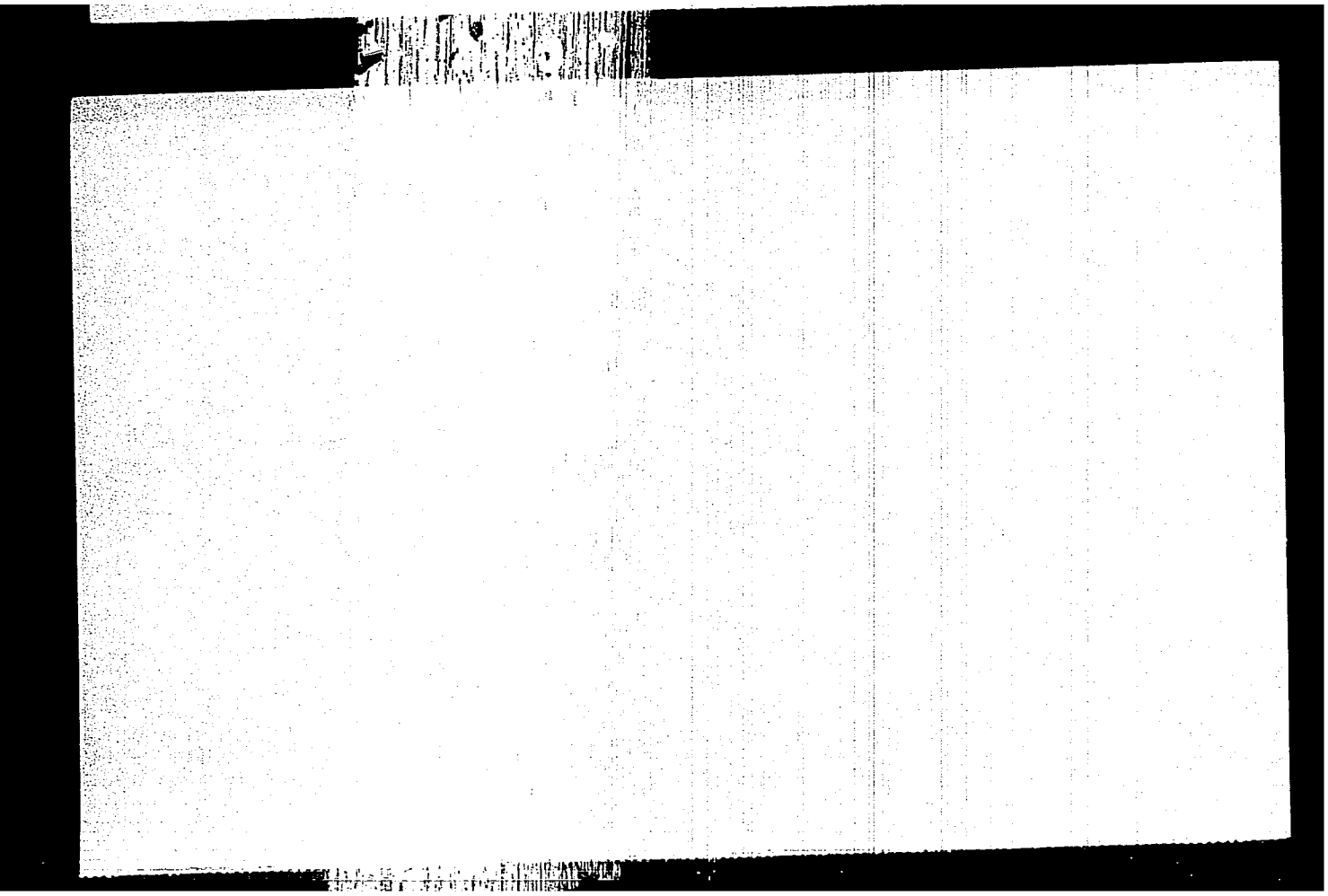


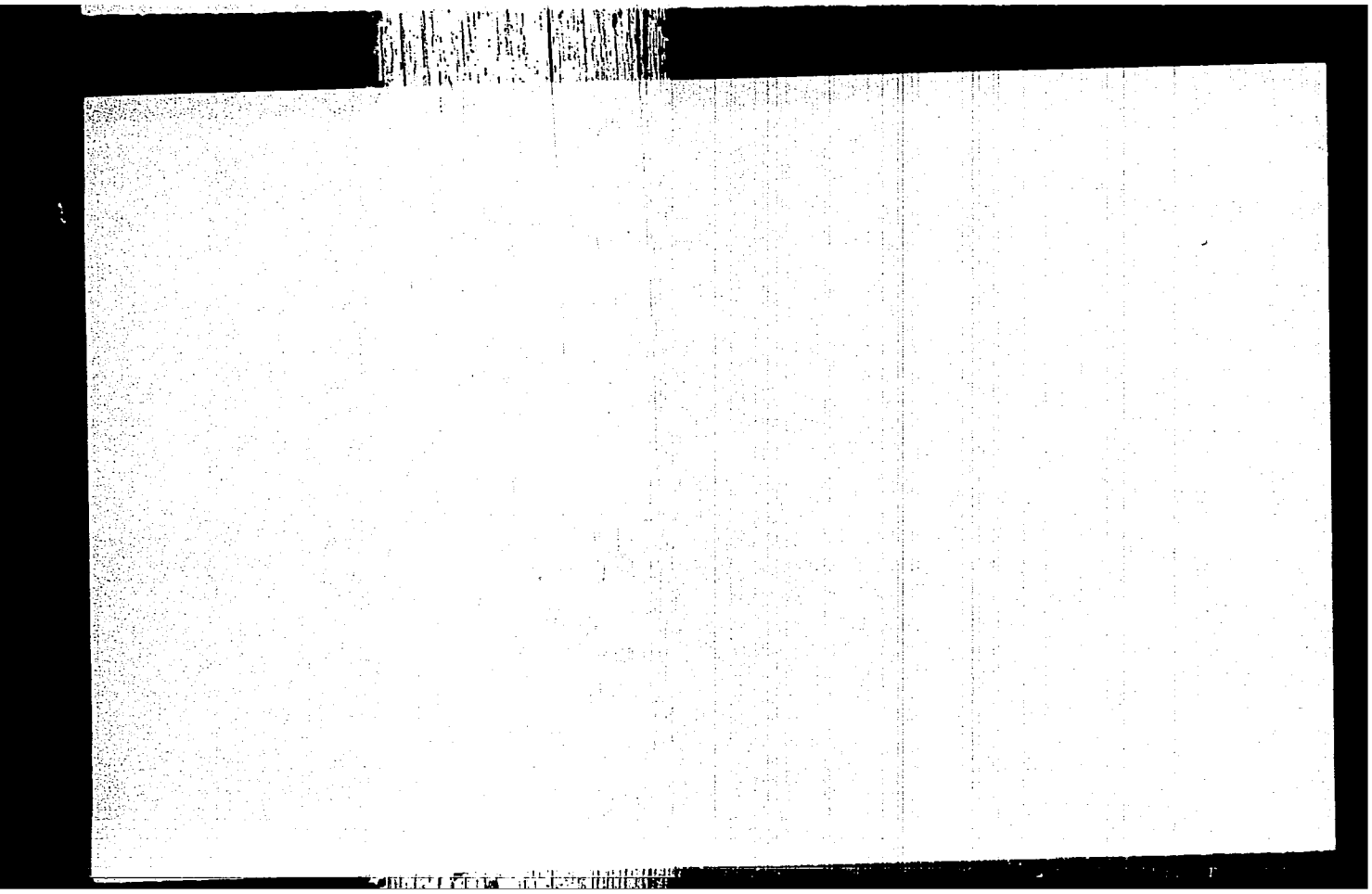


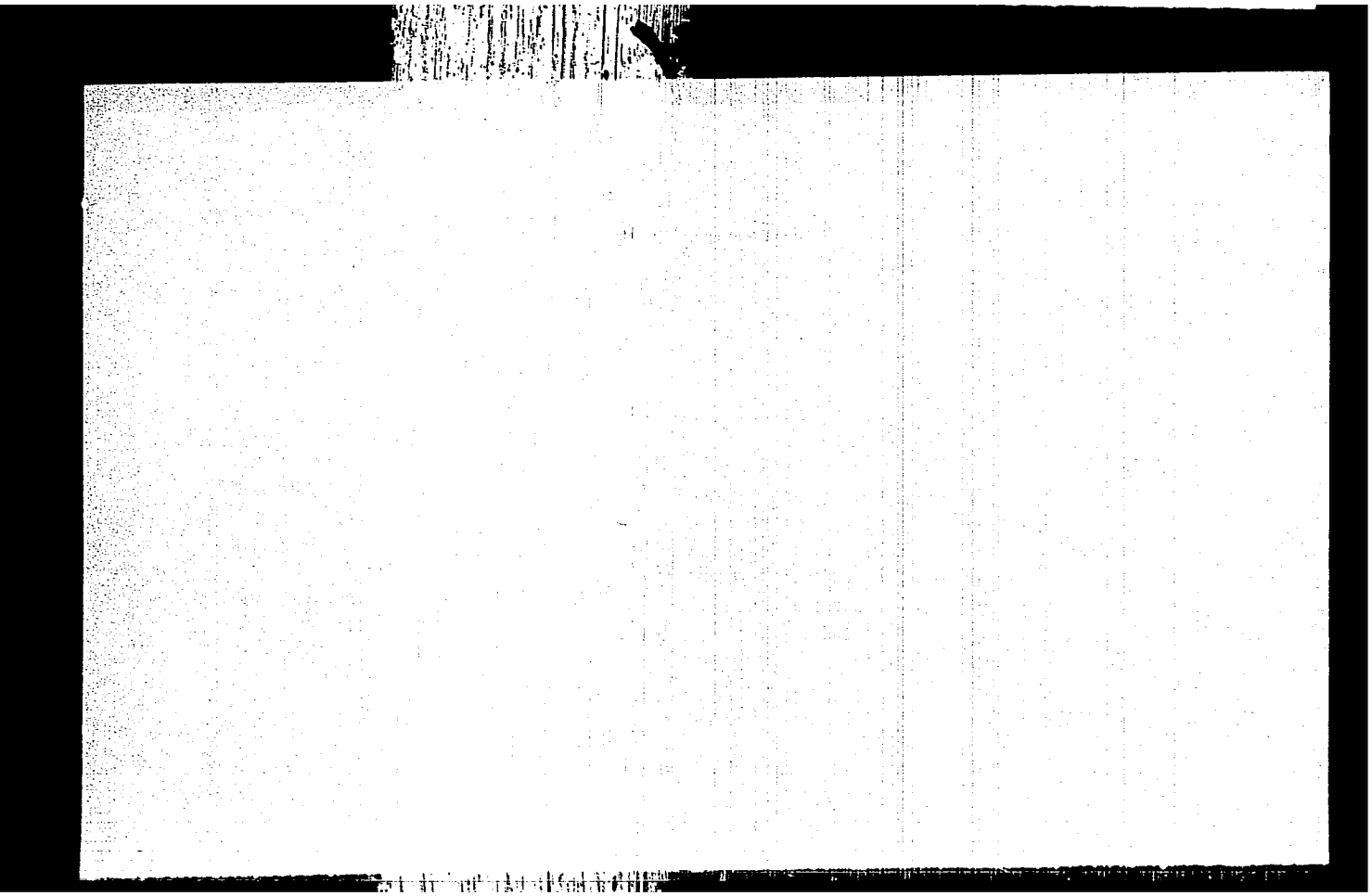


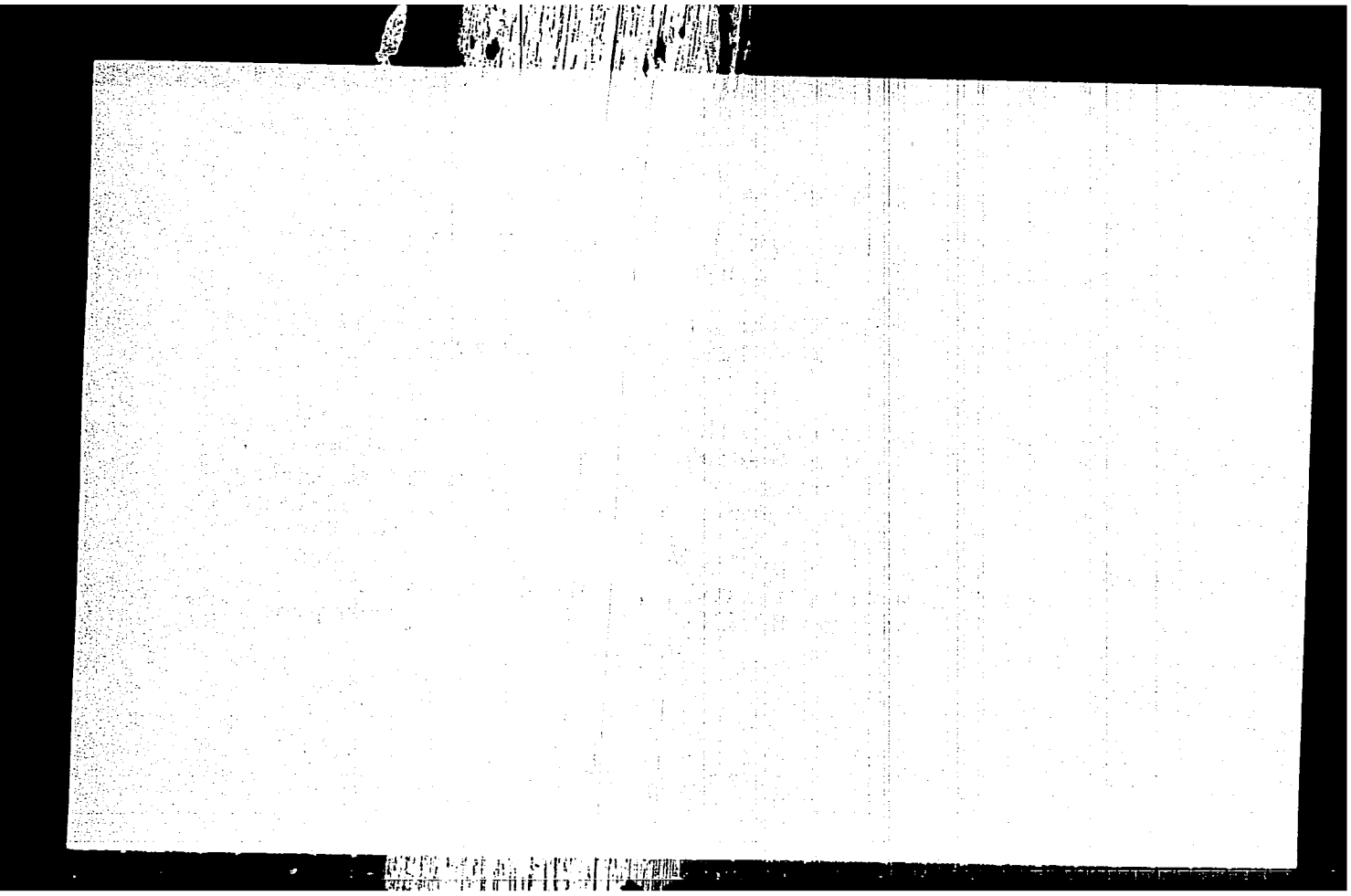


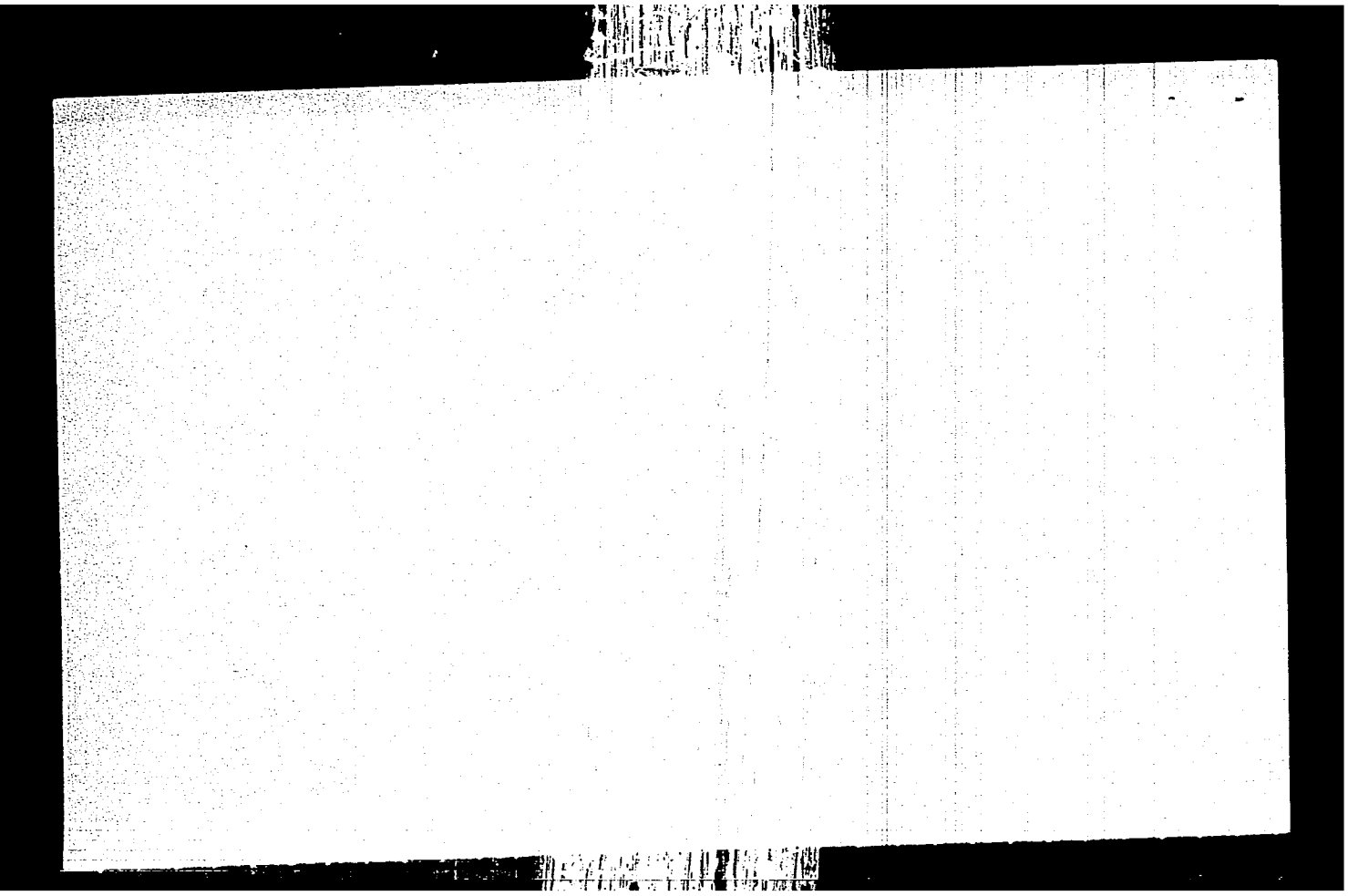


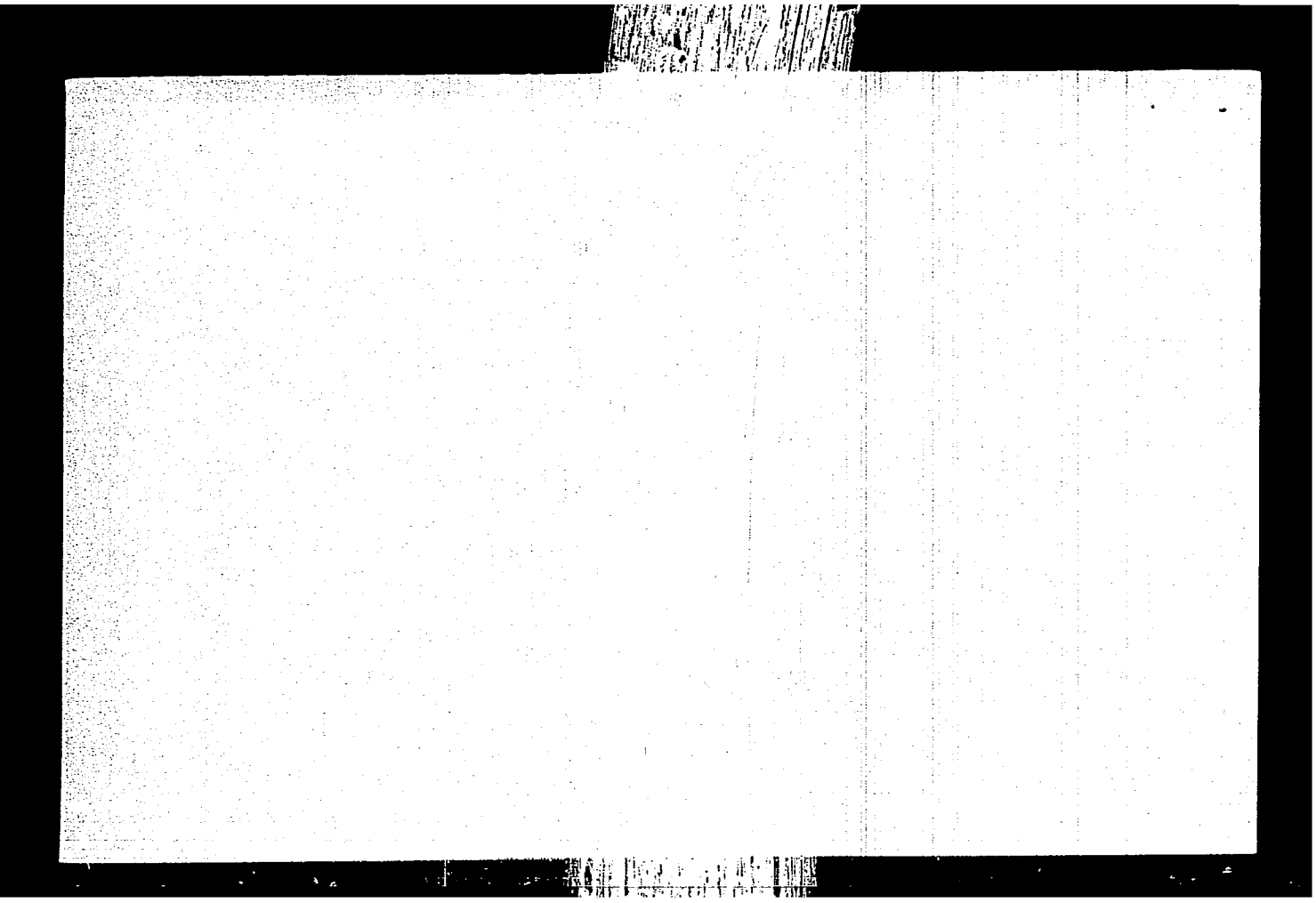


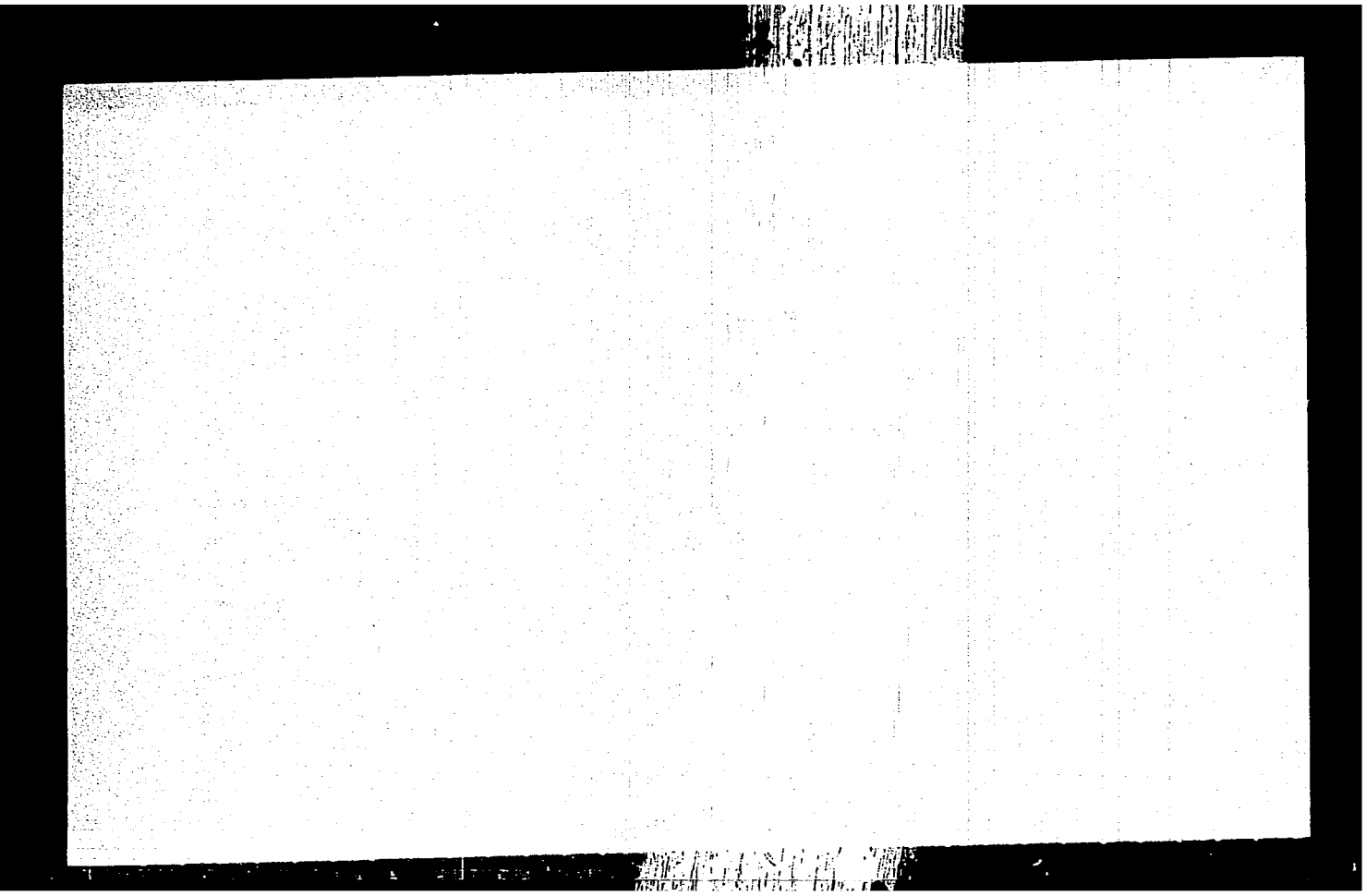


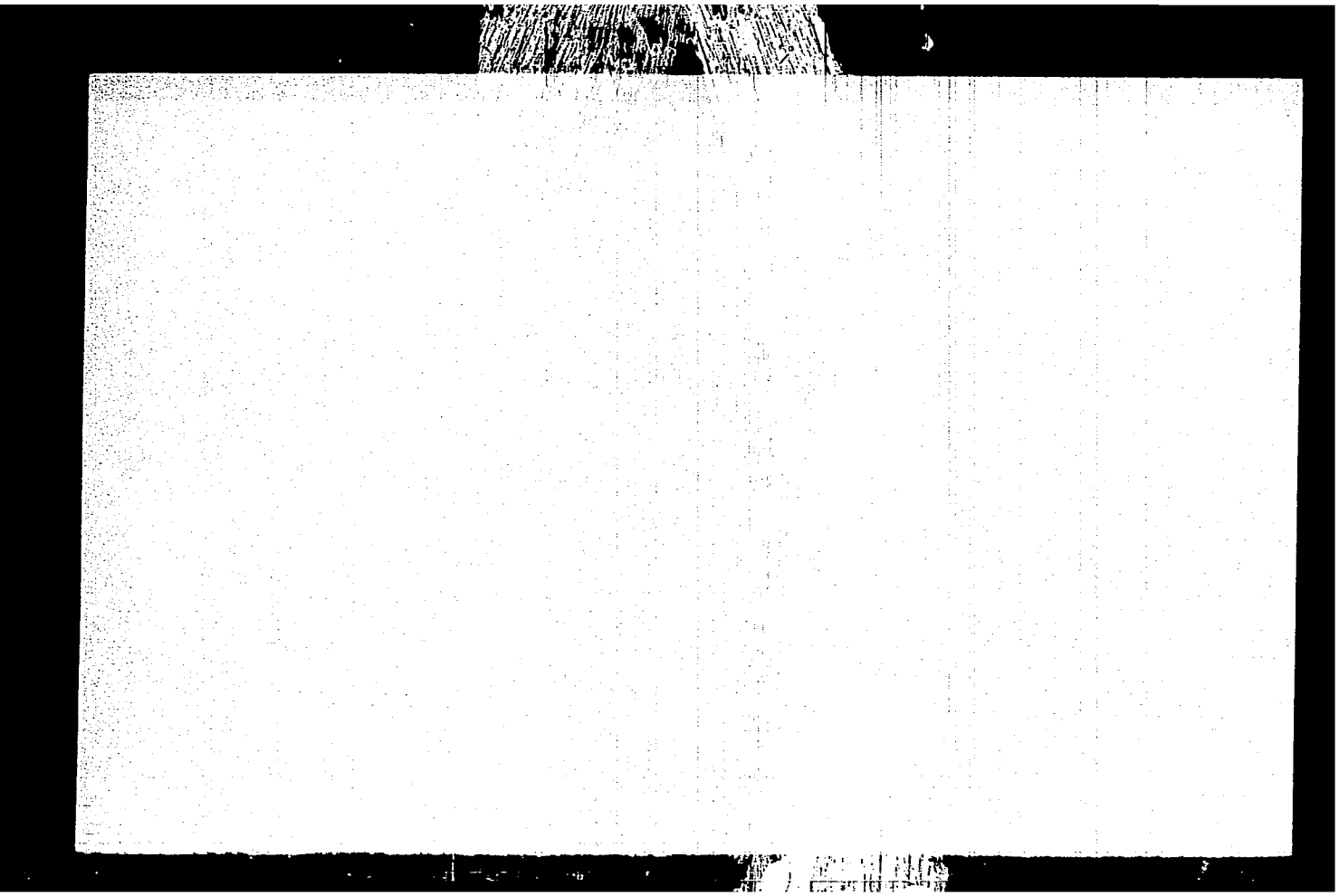


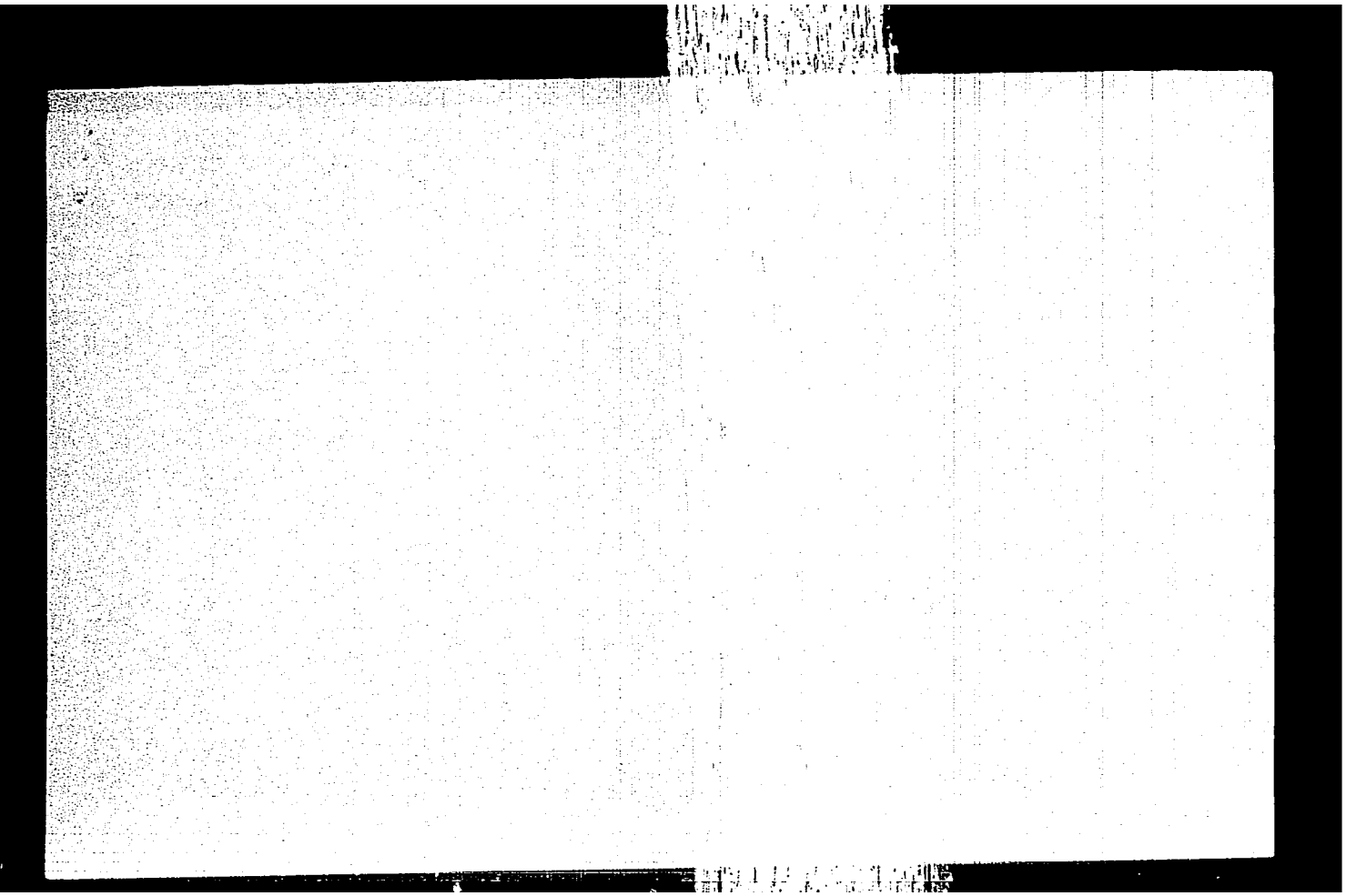


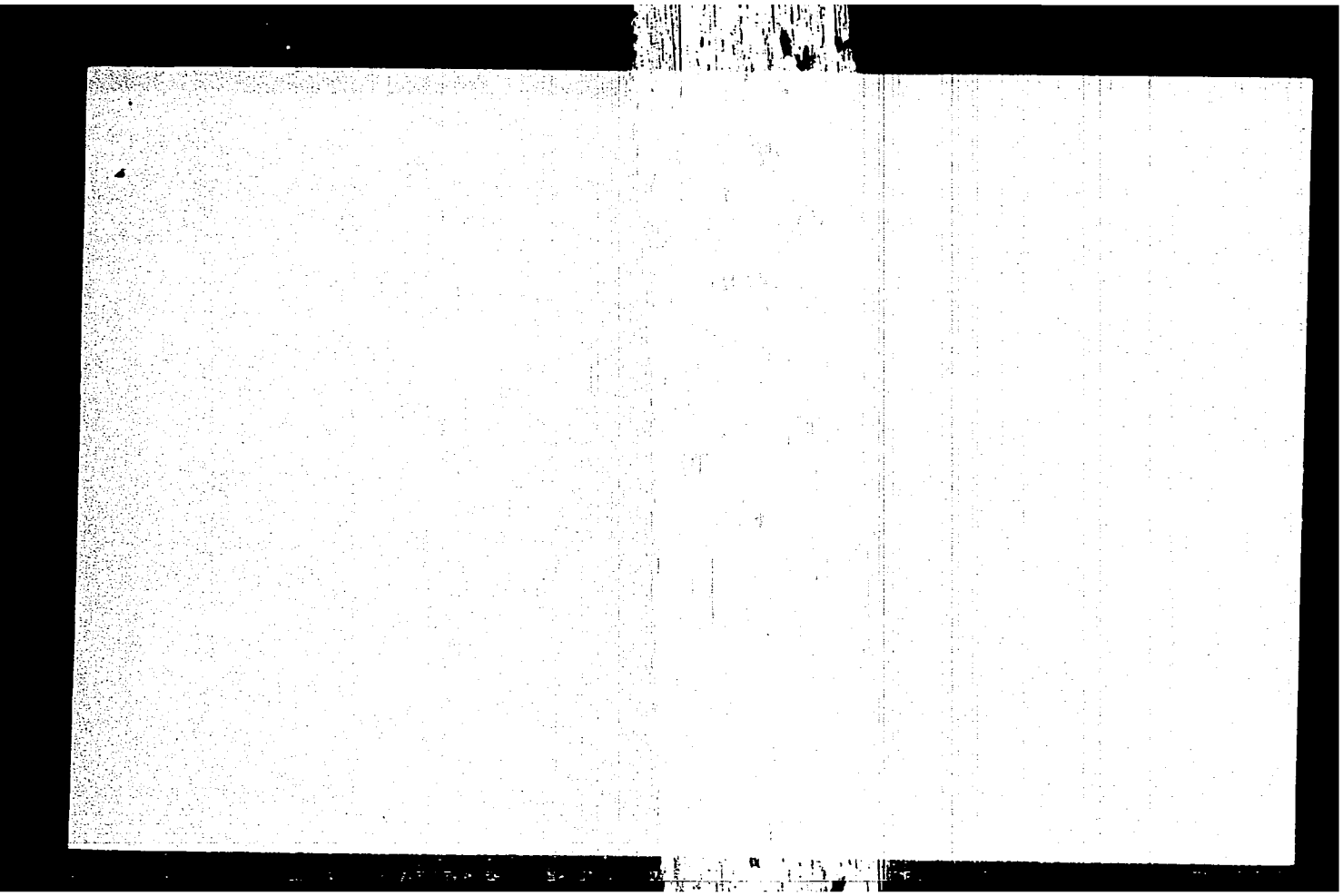


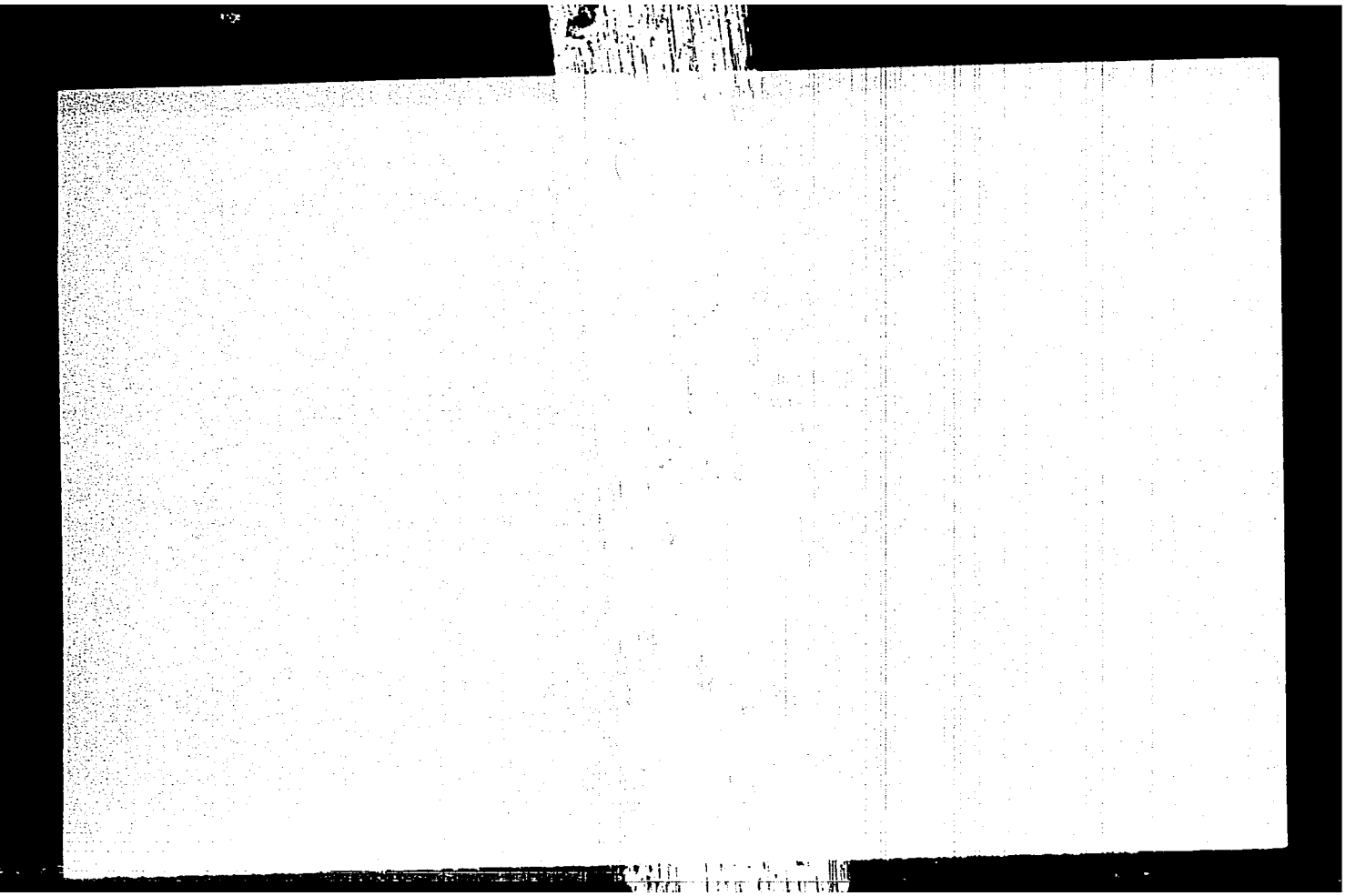


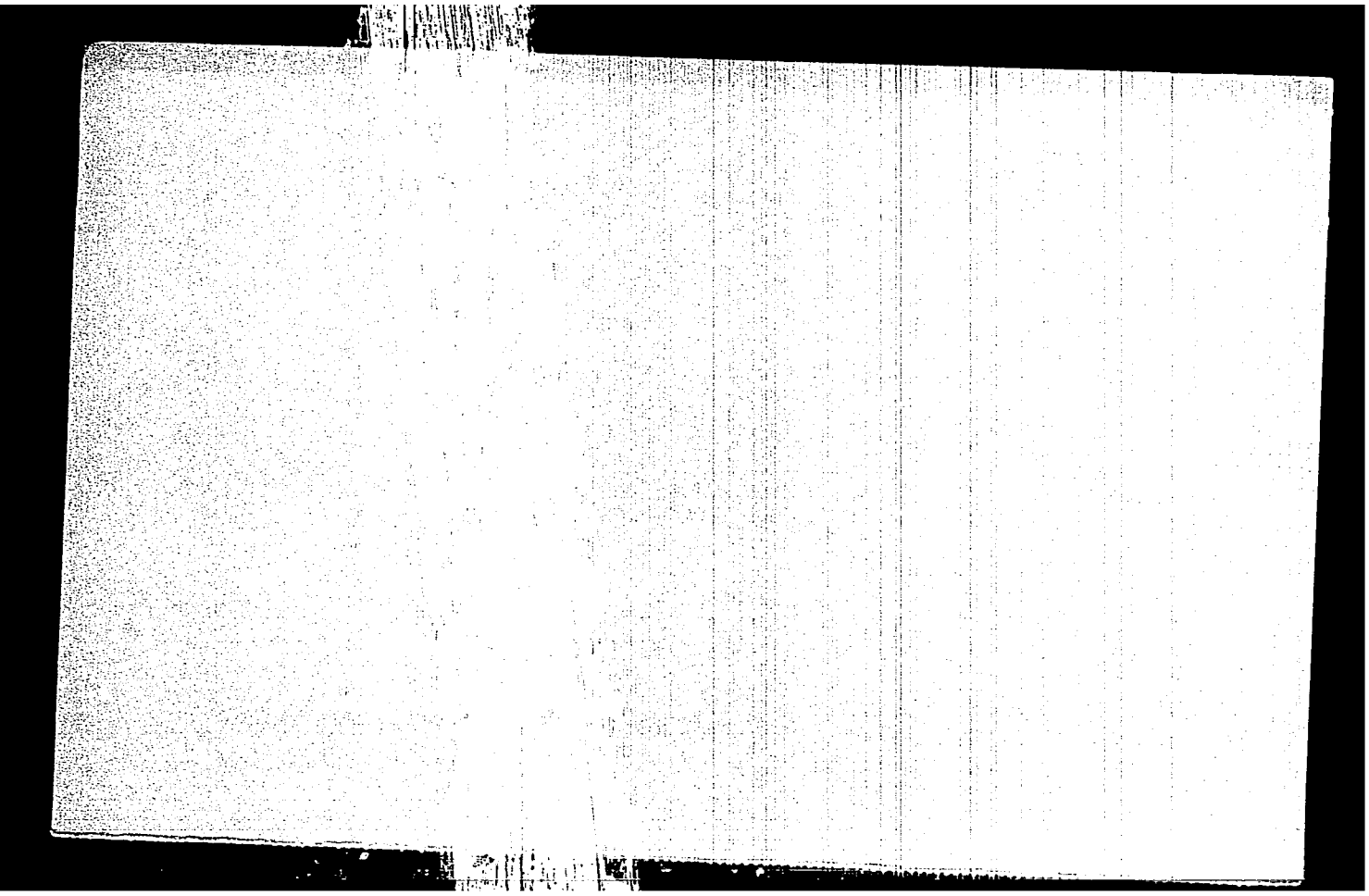


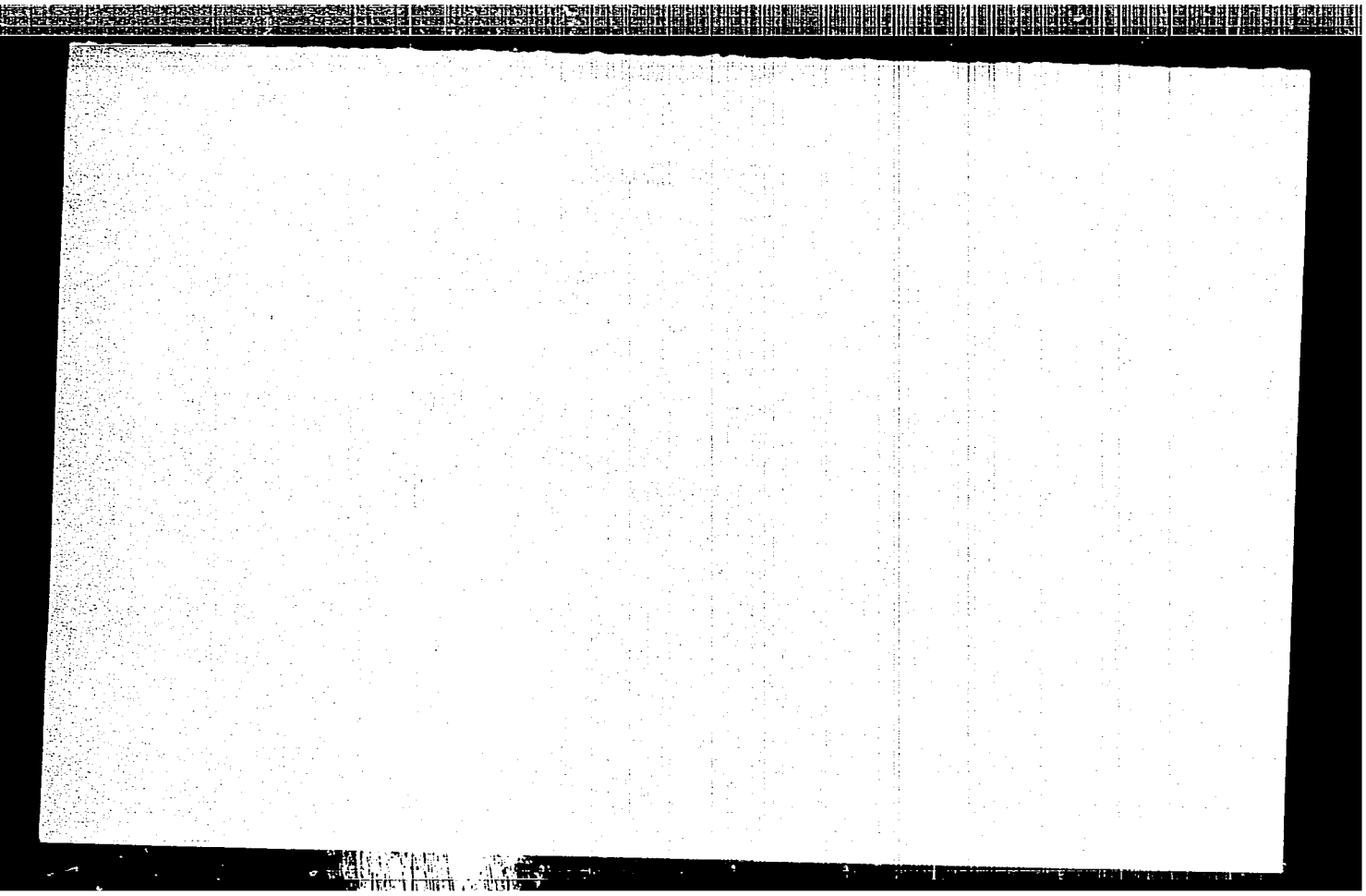












USSR UDC 539.67

BELYAVSKIY, V. I., DARINSKIY, B. M., and POSTNIKOV, V. S.

"Orientational Dependence of Dislocation Internal Friction"

Sb. "Vnutrenneye treniye v metallicheskikh materialakh" (Internal Friction in Metallic Materials"), Moscow, Izd-vo "Nauka", 1970, pp 32-37

Abstract: The pliability defect tensor, governed by the motion of dislocations in an arbitrary slip system, is calculated. Cases of boundary and spiral motion in body-centered and face-centered cubic lattices are considered. It is shown that in single crystals the internal friction has an anisotropic nature. The effect of processing the material on internal friction orientation dependence is discussed, and the results of theoretical calculations and experimental data are compared. 1 table, 1 figure, 6 references.

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USSR

UDC 8.74

BELYAVSKIY, V. L.

"Realization of Arithmetic Operations on Homogeneous Structures of Collective-Behavior Matrices"

V sb. Vychisl. sistemy (Computational Systems -- Collection of Works), vyp. 41, Novosibirsk, 1971, pp 125-132 (from RZh-Matematika, No 5, May 72, Abstract No 5V490 by V. MIKHEYEV)

Translation: The article gives a brief survey of works on the question of the realization of arithmetic operations on homogeneous structures. A description is given of a mathematical model of the process whereby arithmetic operations (addition, subtraction, multiplication) are realized in a number system with the radix 2 on homogeneous structures of collective-behavior matrices. It is important here to take into consideration the redundance of the collective-behavior matrix which is introduced both to increase system reliability and to enlarge the system's logical capabilities. Estimates are presented of the equipment costs of the realizations in question. It is noted that the mathematical model can be used in the development of matrix processors made of superconducting elements, as well as using integrated circuits.

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USSR UDC: 8.74

BELYAVSKIY, V. L.

"Realization of Arithmetic Operations on Homogeneous Structures of Collective Behavior Matrices"

V sb. Vychisl. sistemy (Computer Systems--collection of works), vyp. 41, Novosibirsk, 1971, pp 125-132 (from RZh-Kibernetika, No 5, May 72, Abstract No 5V490)

Translation: A brief survey is given on papers dealing with the problem of realization of arithmetic operations on homogeneous structures. A description is given of a mathematical model of the process of realization of arithmetic operations (addition, subtraction, multiplication) in a system of notation with base "2" on homogeneous structures of collective behavior matrices. In this regard it is important to account for the redundancy of the collective behavior matrix introduced both to increase the reliability of the circuit and to extend its logical possibilities. Estimates are given of hardware expenditures of corresponding realizations. It is noted that the mathematical model may be used in developing matrix processors based both on superconducting elements and on integrated circuitry. V. Mikheyev.

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USSR UDC 681.325.65:537.312.62

KAN, Ya. S., BELYAVSKIY, V. I., VASILENKO, Yu. A., and KAKURIN, N. Ya., Khar'kov Institute of Radioelectronics

"A Multiple-Valued Logic Element"

USSR Author's Certificate No 262954, Filed 25 Jun 68, Published 4 Jun 70 (from Referativnyy Zhurnal -- Avtomatika, Telemekhanika, i Vychislitel'naya Tekhnika, No 8, 1971, Abstract No 8B144 P)

Translation: Multiple-valued logic elements (MLE) whose circuitry is based on amplitude, phase, and frequency representation of data are well-known. A common shortcoming of their circuits is that they are monofunctional and not sufficiently reliable in operation, especially when there is a large number of input variables. In order to guarantee reliable operation on the part of an MLE that can perform a sufficiently large number of multiple-valued logic functions, it is suggested that the MLE be constructed in such a way that information can be coded spatially. This can be accomplished by using cryotrons as components of the MLE, since they make it possible to use a purely geometric principle of information conversion. In the proposed logic element, the cores of the cryotrons in each line are connected in series. The beginnings of the cores of the odd cryotrons in an odd and

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USSR

KAN, Ya. S., et al., USSR Author's Certificate No 262954, Filed 25 Jun 68, Published 4 Jun 70 (from Referativnyy Zhurnal -- Avtomatika, Telemekhanika, i Vychislitel'naya Tekhnika, No 8, 1971, Abstract No 8B144 P)

even line are interconnected. The ends of the cores are also interconnected. The windings of the odd cryotrons in the odd lines and the windings of the even cryotrons in the even lines are connected in series and joined to the unit outputs of the inverters. The unit inputs of the inverters are connected with the sources of the input variables x_i. The windings of the even cryotrons in the odd lines and the windings of the odd cryotrons in the even lines are connected in series and joined to the zero inputs of the inverrers. 1 illustration.

2/2

USSR UDC: 681.325.65:62-52

BELYAVSKIY, V. L., BERESNEV, V. M.

"An Optical Logic Element"

USSR Author's Certificate No 251220, filed 20 Mar 68, published 27 Jan 70 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 11, Nov 70, Abstract No 11A47 P)

Translation: This Author's Certificate introduces a logic element which contains cells made up of two crystals, one of which rotates the plane of polarization under the effect of applied voltage, while the other analyzes the polarization of a light beam. To extend the logical possibilities, increase the number of logical inputs, and identify its structure, each cell contains a third crystal which is made, like the first crystal, of a material which rotates the plane of polarization. This crystal is connected to a source of voltage with a potential difference equal to that across the first crystal. The input light beams are directed simultaneously to several points of the input crystal. One illustration. V. M.

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BELYAVSKIY, V. P.

So: JPRS 53649
21 July 71

CONCERNING A PROMISING TREND IN COMPUTER TECHNOLOGY

[Article by V. P. Belyavskiy, Yu. A. Yaslenko and N. Ya. Kokurin; Khar'kov, Problemy Bionika, Respublikanskiy Mezhvedomstvennyy Nauchno-Tekhnicheskiy Sbornik, Russian, No 2, 1970, pp 82-87]

To a considerable extent, the scientific-technical achievements of recent years have been triggered by the development of computer technology, communications engineering, and the methods of data processing. These trends have supported the development of complex technical systems. However, with growth in the complexity of the problems being solved and an increase in the requirements imposed on systems' quality, a contradiction has arisen between the indexes determining the feasibility of building systems with computer complexes.

One such index is the reliability of operation. The provision of the necessary level of reliability along with increased complexity requires a reduction in intensity of failures in the individual elements of a system. By two orders of magnitude, which is technologically unacceptable and economically disadvantageous. The necessity therefore arises for the development of new principles and methods for the construction of systems preserving the operating reliability at relatively low reliability of the system's elements, a divergence in the values of their parameters, or even the breakdown of a certain number of elements.

Modern computer systems lose their ability to function completely to almost any malfunction. An appreciable increase in the complexity of systems can lead to the situation that malfunctions will become more likely, while excessive miniaturization will only make repair more difficult or will make it generally impossible. In both instances, the costs related to the correction of malfunctions are increasing. Naturally, the planner is interested in the question as to whether the costs related to the malfunctions will make a planned system inadvisable.

Acc. Nr: AP0052074 BELYAVSKIY Ye.M. Ref. Code: UR0396

PRIMARY SOURCE: Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya, 1970, Vol 14, Nr 1, pp 78-80

DEVELOPMENT OF PYREXIA IN ADMINISTRATION OF LEUKOCYTIC PYROGEN INTO VARIOUS PORTIONS OF THE CEREBROSPINAL FLUID BEARING SYSTEM IN RABBITS

M. D. Khudayberdiyev, A. I. Anisimov, Ye M. Belyavskiy

Experiments were performed on rabbits with chronically implanted cerebral cannulae. A comparison was made of development of fever caused by administration of standard volumes of leukocytic pyrogen (LP) into the III ventricle, the lateral ventricle of the brain, the subdural space of the cortex of cerebral hemispheres, the cysterna magna, subdural space of the spinal cord in the lumbar region (L_{2-4}) and intravenously. In administration of minimal doses (2 µl) pyretic reaction could be induced only after the injection into the III cerebral ventricle. To induce analogous pyretic reactions from other portions of the cerebrospinal bearing system of the brain a considerable increase of the dose of the leukocytic pyrogen (to 5—100 µl) was required.

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AUTHOR-- BELYAYEV, A., CAPTAIN 2ND RANK, CANDIDATE OF PHILOSOPHICAL SCIENCES

TITLE-- THE SCIENTIFIC-TECHNICAL PROGRESS AND BUILDING OF COMMUNISM

NEWSPAPER-- KRASNAYA ZVEZDA, JANUARY 7, 1970, P 2, COLS 2-6, AND P 3, COLS 1-4

ABSTRACT-- ACCORDING TO THE ARTICLE, THE SOVIET UNION HAS MORE THAN 4,700 RESEARCH INSTITUTIONS AND 785 INSTITUTIONS OF HIGHER LEARNING. THE SOVIET INDUSTRY EMPLOYS 2.168 MILLION ENGINEERS.

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1/2 018 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--CALCULATION OF SELF ABSORPTION IN BETA SOURCES -U-

AUTHOR--BELYAYEV, A.A.

B

COUNTRY OF INFO--USSR

SOURCE--AT. ENERG. 1970, 28(3), 238

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